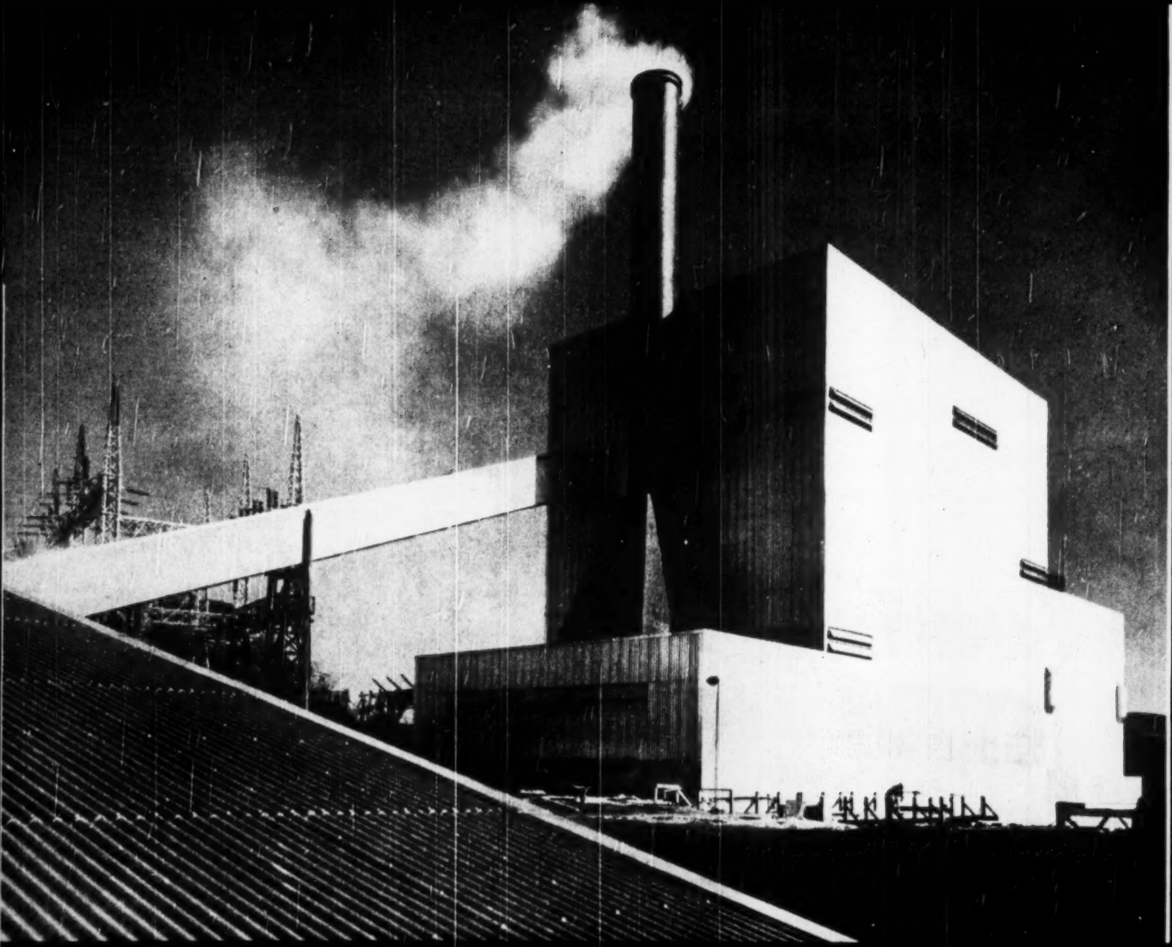
ENGINEERING NEWS-RECORD



★
★

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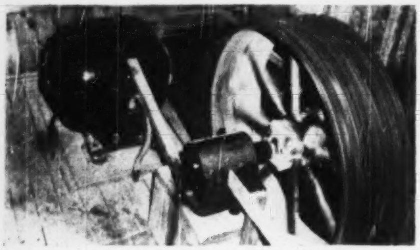
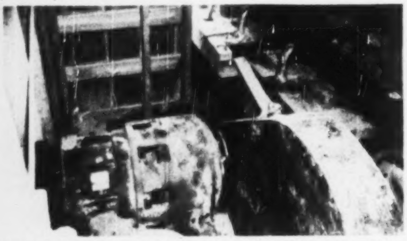
turning granite into sand . . .

. . . Electrically

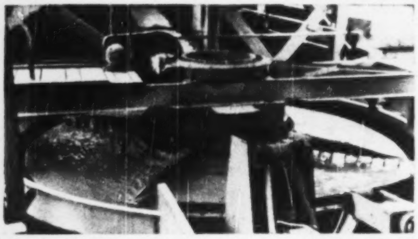
Rock coming from secondary crusher is carried on conveyor driven by a 50-hp G-E gear-motor



Crushed rock is reduced to sand in Marcy rod mill made by The Mine & Smelter Supply Co., Denver, Colo. Drive is a 350-hp G-E synchronous motor



50-hp G-E motor powers conveyor belt hauling material to hopper at top of cement mill



Dorr classifier, for washing sand clean and removing dirt and fines, is powered by a 3-hp G-E gear-motor

Aggregate Plant at Clark Hill Depends on G-E Driven Equipment To Maintain High-Speed Production

It takes rugged, dependable equipment—with rugged, dependable drive—to turn out 450 tons of aggregate per hour, 24 hours a day, as the high-speed plant at Clark Hill is doing. That's why Allstates Constructors, Inc.—a team of six contractors led by Walsh Construction Co.—is relying on *electric drive* to keep the crushers, rod mill, conveyors, and sand classifiers on-the-job, all the time.

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BETTER PRODUCT
LOWER COST

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664-7

200-Ton Turbine Casing

formed from steel plates

This steel shell is a scroll casing for the U. S. Bureau of Reclamation's new hydroelectric plant at Davis Dam on the Colorado River, where it will enclose one of the plant's five huge turbines. Through the 22-ft intake of the casing will pour the impounded waters of the Colorado, to turn the turbine shaft.

The casing consists of steel plates, varying in thickness from 5/8 in. to 1 in., formed to shape and riveted together. It weighs 200 tons, and measures approximately 65 ft across.

All five scroll casings for the plant at Davis Dam are being supplied by Bethlehem. This unusual job is representative of Bethlehem's ability to turn out steel-plate construction to meet any requirement. We are also supplying many types of steel-plate work for other fields, including such items as oil storage tanks, gas holders, pressure vessels, penstocks, large-diameter pipe, and tunnel linings.

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ENGINEERING NEWS-RECORD

VOLUME 144 FEBRUARY 23, 1950 NO. 8

WALDO G. BOWMAN
Editor

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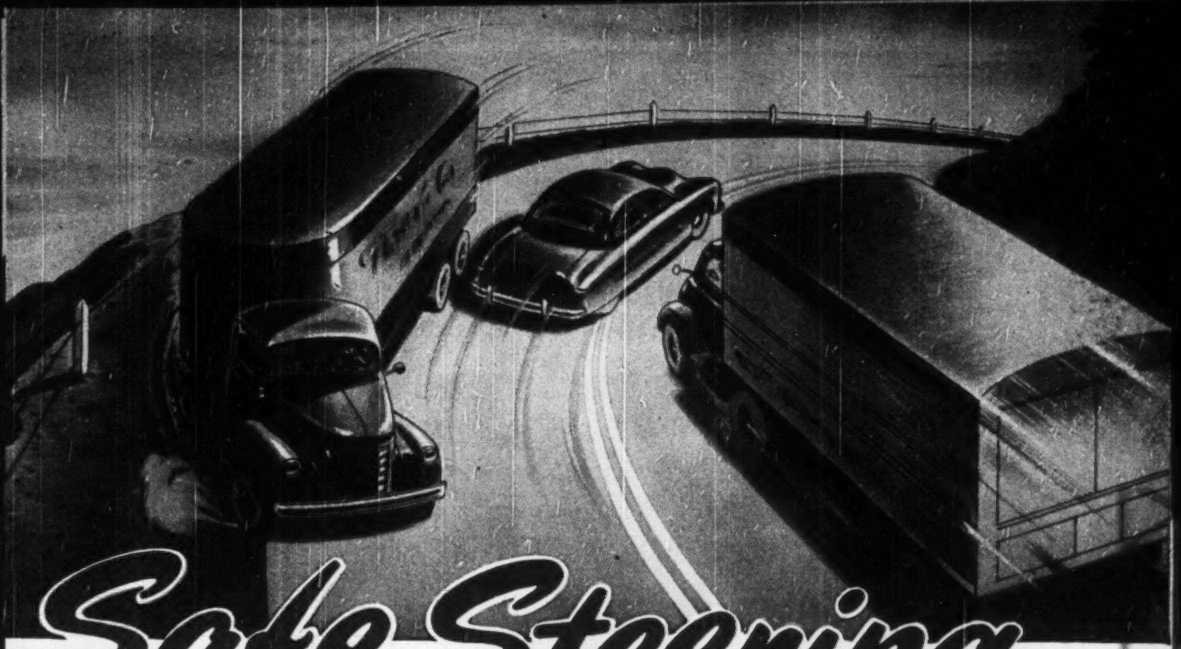

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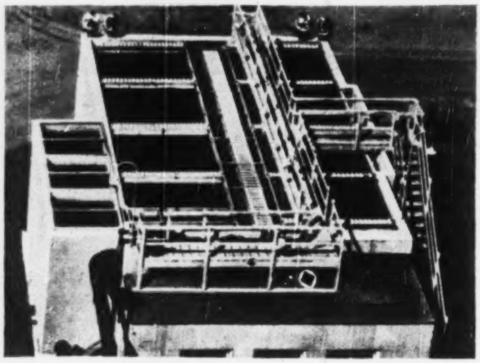

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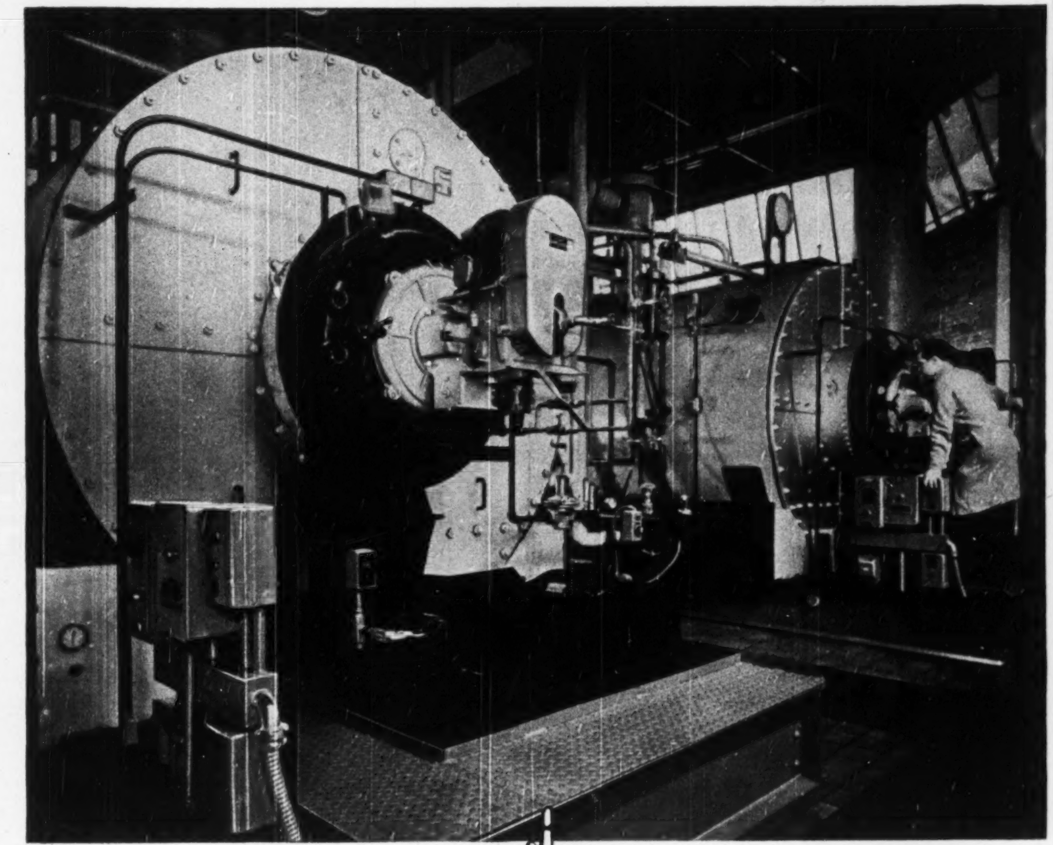

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BOILERS BURN DOLLARS . . .

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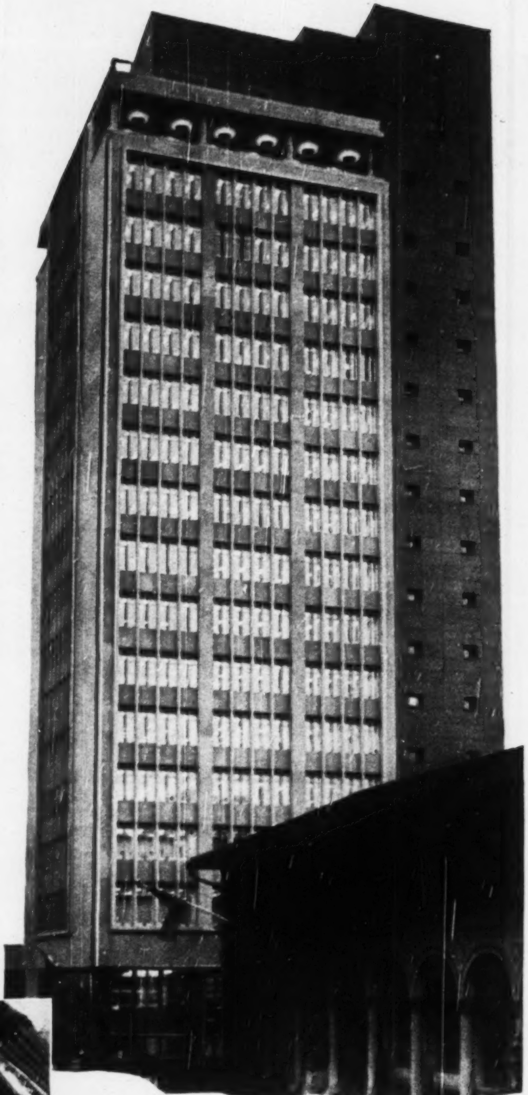
Monotube Piles

PICTURED here is the beginning and end result of an interesting construction project. The striking, functionally designed structure is one of the most modern office buildings—inside and out—in this country.

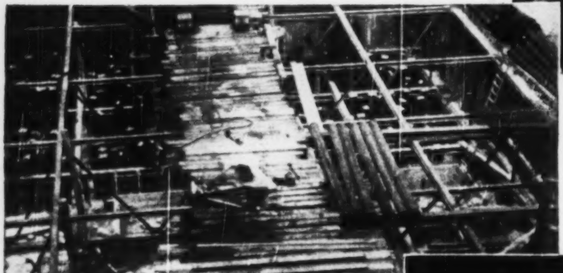
Wise planning went into the foundation of this 18-story building. It included Monotube piles for abundant strength and permanency . . . combined with *practical economy* right from the start.

More and more engineers are turning to the Monotube as a *predictable* pile that leaves no factor to chance. For example, Monotube tapered and fluted design assures measurable advantages in strength, lateral stability, heavy loading and driving . . . benefits that should not be overlooked. Also, Monotubes offer a flexibility of length, gauge, diameter and taper that permits maximum effectiveness *and* economy for varying soil conditions under *all* types of structures.

These are only a few of the important features that you can apply to advantage when you plan with Monotubes. For complete, specific data, write The Union Metal Manufacturing Company, Canton 5, Ohio.



- *Ultra-modern 18-story office building of the Waterman Steamship Corp., Mobile, Ala. (Engineers and General Contractors: J. P. Ewin, Inc.; Consulting Engineer: R. S. Christiansen; Architects: Platt, Roberts & Co.)*



- *Foundation under way, showing use of some 480, 7 gauge Monotube piles, 25 and 30 feet in length.*

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- Mack six-wheel trucks incorporate Mack's famed Balanced Bogie—give you a profit-winning combination under the most adverse hauling conditions. Here is no makeshift assembly — but a bogie that is a component and integral part of the complete truck unit.

No other trucks — for operation on or off the highway —offer you all the outstanding advantages you get with the Balanced Bogie in Mack six-wheelers.

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NEWS BRIEFS

No Politics—Georgia's Governor Talmadge has signed legislation reforming highway administration in the state. A three-man board, whose members the governor can't dismiss, will rule Georgia's highways henceforth. Secondary road funds will be distributed under formulas written into the law, which, the sposors say, will eliminate politics, boost paving expenditures in rural areas and distribute the funds equitably among counties.

Bankers' Delight—A Massachusetts legislative committee will approve a second $100 million bond issue for highways. Recommended by Governor Dever, it was supported by most committee members.

Road Plans Wanted—St. Louis wants information on its road needs, as a basis for application for federal grants-in-aid. Malcolm Elliott, formerly Upper Mississippi Valley division engineer for the War Department, will head the year-long survey which is being undertaken jointly by the city and state.

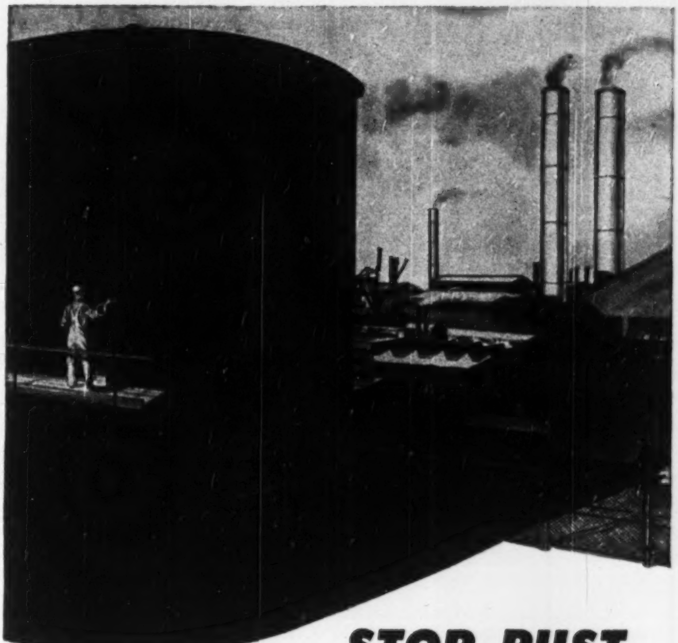
Took a Long Time—Start of work on the elimination of Rochester, N. Y.'s West Side grade crossing is scheduled for the near future. Hearings, discussion and planning on the $3,000,000 project have been going on for nearly 25 years. Bates & Rogers, Chicago, has the contract.

Waste Not, Want Not—Ninety-year-old piles are being used by Boston's Metropolitan District Commission in construction of the Esplanade sewer. They were found by workmen when a ditch was dug for the sewer. Tops were somewhat battered, but the rest of the 12 to 16-in. piles was firm. So the tops will be sawed off and a concrete slab placed atop them.

Workin' on d'Levee—West Tennessee's Flood Control and Soil Conservation Commission is off to a good start on a 28-mi levee in Dyer County, Tenn. All right of way for the first 4-mi section has been cleared except for one 2,400-ft strip.

Biggest Year Coming—Pennsylvania highway work will have its biggest year in 1950. Highways Secretary Smock says 1,700 mi will be improved, and that revenues should permit a $100 million-per-year program for some years ahead. Plans for a long-

(Continued on page 12)



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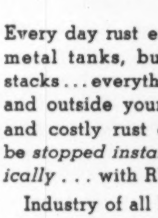
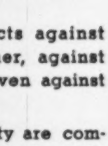
**Names on request*



If you have a rust problem, and would like a free survey and recommendations, send your name and address on your business stationery. A qualified factory representative will arrange this free service, which includes a trial size of Rust-Oleum for specific test purposes. There is no obligation on your part. Write today.



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for Climbing Heavy Grades and for Plowing, Blading and Bucking Snow.

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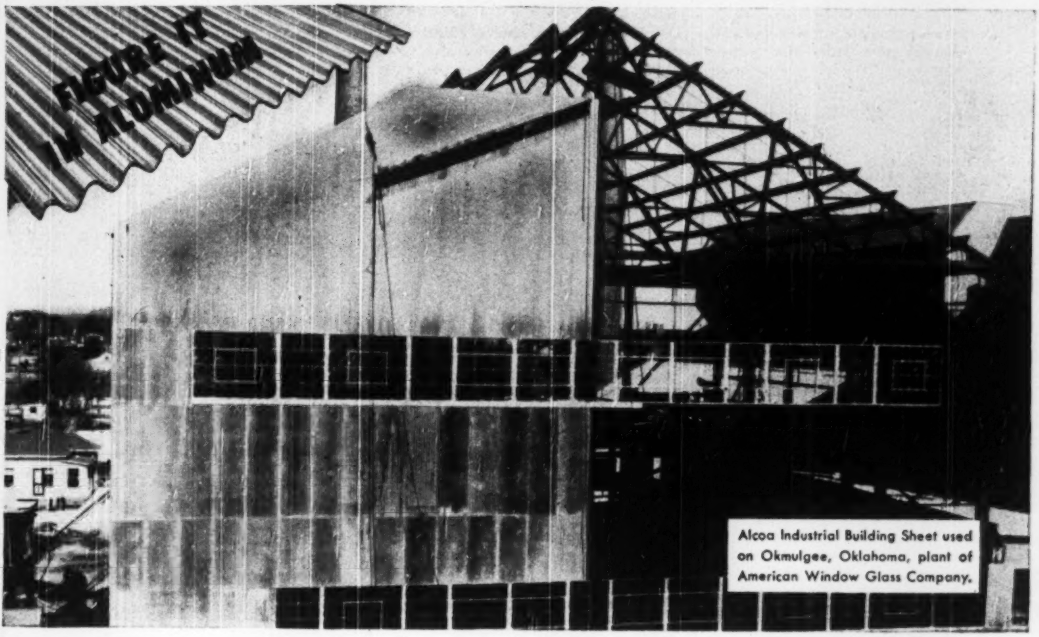

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Relieving platform, which supports New York's East River Drive, rests on 72,000 creosoted piles. Wood form, pictured here, carries reinforced concrete slab.

72,000

CREOSOTED PILES SUPPORT

NEW YORK'S EAST RIVER DRIVE!

New York's East River Drive, completed in 1942, is one of the city's most impressive waterfront parkways. This Drive is about 7 miles long; in six lanes, it carries two-way high-speed traffic. For a distance of 4.3 miles, relieving platform bulkheads were built along the shore of the East River to support the highway. These relieving platforms rest on approximately 72,000 creosoted timber piles, driven offshore in water 20 to 30 feet deep.

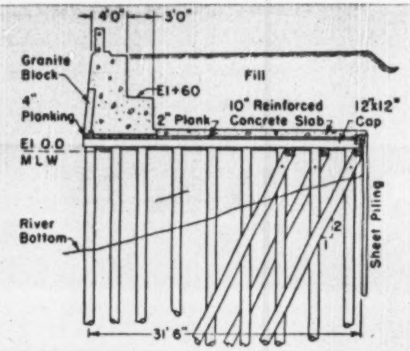
The engineers specified pressure-creosoted piles because of their economy and permanence. These piles are usually lower in cost than other permanent pile materials. The pressure-creosoting treatment protects them against marine borers; also, against decay and insect attack where cutoffs are above the water table.

When your projects require permanent construction *with economy*, Koppers Pressure-Creosoted Piles may be the best answer. Koppers Piles can be delivered on schedule, in lengths up to 130 feet. Write for quotations.

KOPPERS COMPANY, INC., PITTSBURGH 19, PA.

KOPPERS

PRESSURE-TREATED WOOD



As reported in an article in Civil Engineering, April 1949, "Design is based on assumption that creosoted piles used will outlast other materials in structure."

(Continued from page 9)

range improvement program call for $162.5 million yearly to be spent on roads for 10 years.

Keeps the Business at Home—Cambridge, Mass., Housing Authority has agreed to throw out original specifications for a $2,500,000 veterans housing project so that Cambridge-made bricks could be used. The move was expected to save the jobs of 90 brickyard employees facing layoffs.

Willamette Bridge Tests—Oregon's Highway Department has begun tests for location of piers for the $1,250,000 Willamette River bridge at Salem. The steel structure will be 767 ft long exclusive of approaches, with four piers supporting a 250-ft main span and 210-ft side spans. Financing will be state and federal.

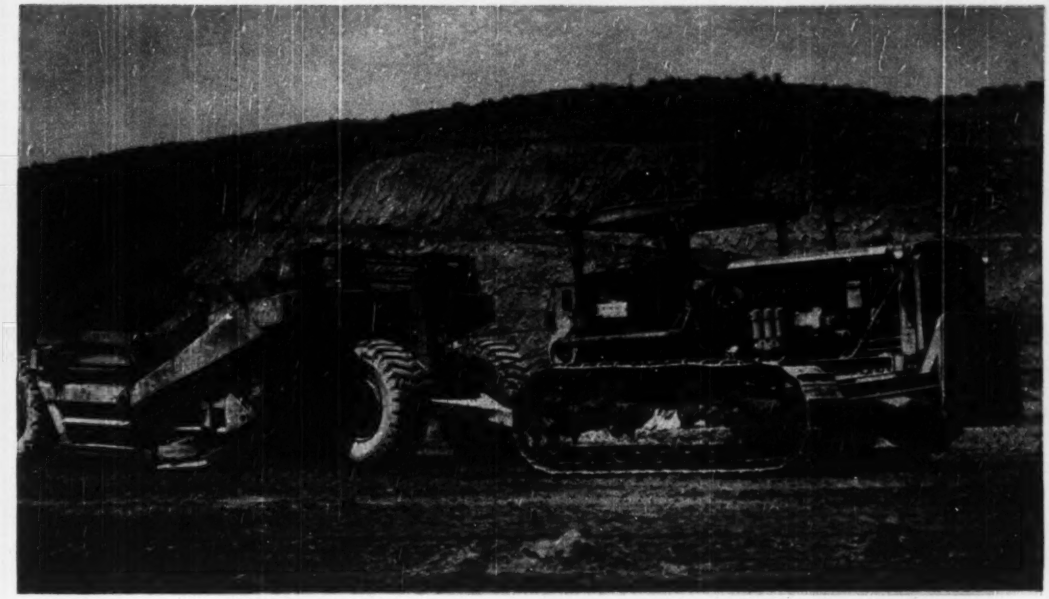
Help for the Budget—Boston's Mayor Hynes favors a bill for a study of incinerator construction whereby municipalities adjacent to Boston could use the facilities and cut service costs while retaining their identities.

THE COVER

Typical of the flood of new steam-power plants which are going on the line throughout the country—and keeping the heavy construction industry busy, in the process—is the Riverton station of the Northern Virginia Power Company, on the Shenandoah River near Front Royal, Va.

From the construction man's viewpoint, this station is striking because of the sheathing on its steel framework. It's wall panels are made of sheet aluminum backed by fluted steel, with 1.5-in. glass fibre insulation between the two. Most stations have brick walls. This one, designed at the time construction costs were rising at their most furious pace since the war, saved more than $50,000 by skipping the bricks for the aluminum-steel sheathing.

Sited on a limestone bluff above the Shenandoah, the plant was designed to fit the natural contour, a move which made it possible to avoid excavating the usual enormous foundation. Its concrete foundation wall extends 13 ft above the highest recorded flood level. And the plant is designed for later installation of three more 40,000 kw generating units. The first, installed recently, operates at 850 lb. pressure, 950 deg. Its pump house is designed to withdraw as much as 1,800,000 gal per hr for use in the condenser and subsequent return to the river. The plant's coal-handling siding is designed to let cars roll to the dump, then away, without the use of a yard locomotive.



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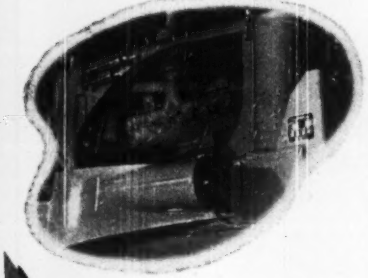

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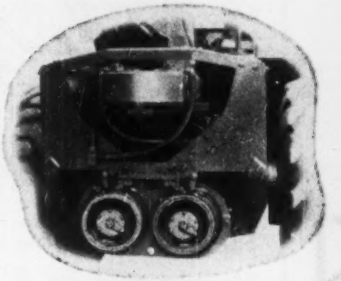

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R-10

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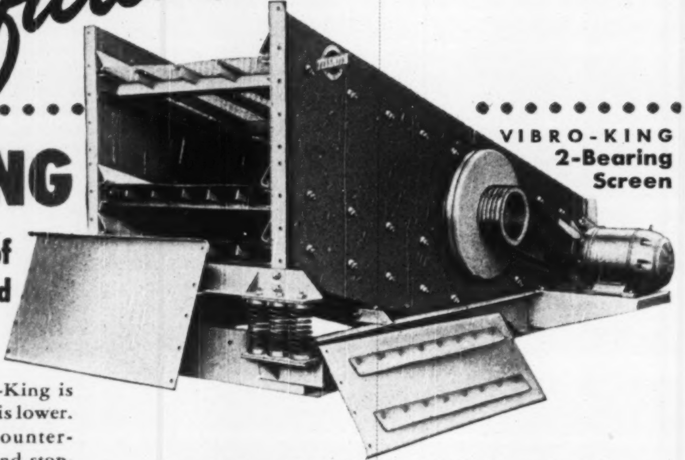

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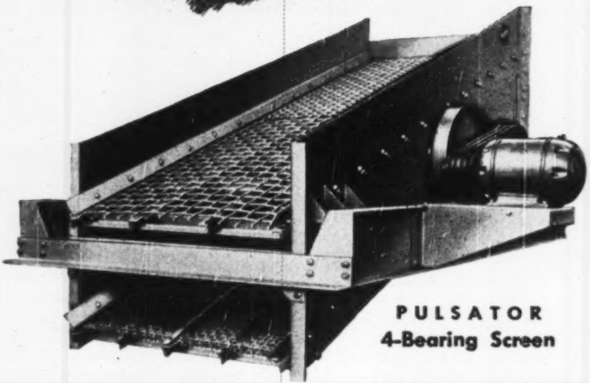
V-3



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THE CONSTRUCTION WEEK

CONGRESS AND TAXES AND YOU—Construction men have a direct interest in all the major legislation which Congress can be counted upon to enact this year—and, in any realistic sense, these issues are taxes, spending and social security.

Taxes: There's to be a broad excise tax cut which will help on tires but won't on gasoline. To make it up, there isn't much prospect of anything that will hit construction, except possibly the Mills plan (which could severely squeeze contractors who are short of working capital by speeding up corporate tax collections.) The outlook is against a proposed boost in corporate levels from 38 to 42 percent. There's a real possibility for construction in Sen. O'Mahoney's drive for more liberal depreciation policies and less rigid penalties on undistributed earnings. These could help earnings.

Spending: Don't look for economy, despite the House cry for it. Economy talk is good, in such times, for Congressmen facing election (they all are.) But economy action isn't deemed effective as a vote-getter. So the outlook is for lots of talk —and continued spending. Besides, unemployment is rising (unpublished federal estimates see 5,000,000 jobless by July, perhaps 6,000,000 at year's end.) That should cool off the economizers.

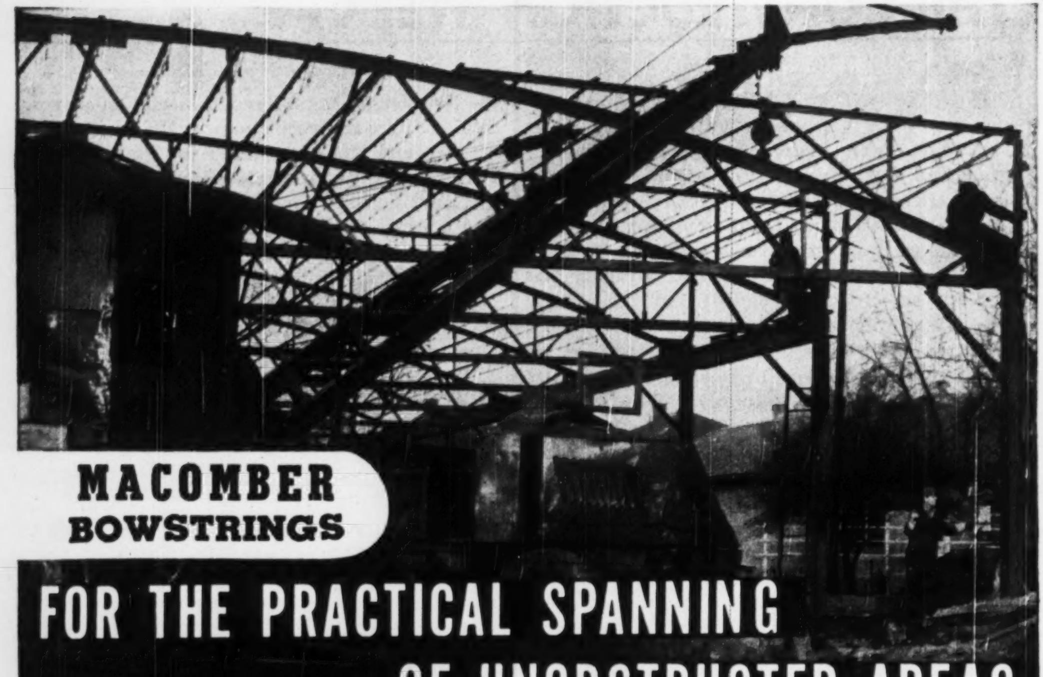
Social Security: Expansion is sure to be voted. That won't touch construction, as such, but raising benefits by half will— by upping payroll deductions on employers and workers alike to the first $3,600—perhaps $4,800. Management will be behind such increases this time, since they ease the costs of private pension plans.

FREE ROADS DOWN, TOLL ROADS UP—Gov. Alfred E. Driscoll, of New Jersey, announced he had achieved a balanced budget that would require no new taxes. The magic formula was simple: The state will shift $22,000,000 in highway revenues to general state purposes. Although the governor carefully asserted he does not consider the switch a "diversion", state motorist groups—quick to assail such switches in the past—are expected to react violently. An interesting point is this: New Jersey is resorting already to toll financing to build a badly needed north-south highway. Observers figure the budget plan means more toll roads will be planned.

TRUCKMEN JOIN BATTLE—It isn't only the threat of motorist-group action that bothers Gov. Driscoll—last week he had a real fight on his hands as New Jersey truckmen opened a legal battle against increased heavy truck fees and revision of weight limits. Newly proposed axle-loadings, the New Jersey Motor Truck Association charged, would require six trucks to carry the present loads of five—and truckmen defied the state to prove that damage to pavements was caused by trucks, and not by faulty construction and maintenance. The association didn't resist one further dig—at diversion of funds (see above.) Said the association: "Had $125 million of diverted highway funds been used for road construction and maintenance, there would be no question of damage by the trucking industry."

TRUCK ROAD ONLY?—New York State's Governor Dewey has named a committee to consider a revised plan for liquidating any revenue bonds issued to finance the proposed 500-mi New York City-Buffalo Thruway. The scheme now under consideration would permit sale of special license plates to prospective Thruway users. Issued annually, and charged for according to weight, the proposal apparently would restrict the road to plate holders. That certainly would keep the Sunday drivers off the road, but some observers wonder whether such a plan would make it feasible for much traffic other than trucks to use the highway. Plan arises from an engineering report of a few years ago which held that too many parallel free highways exist to warrant the expense of toll takers on the Thruway. The license plate plan at least would eliminate the toll takers.

ATOM RUSHES TVA—Any prospect that TVA, with its immediate postwar power capacity expansion nicely in hand, could relax a little in its construction pace has gone with the wind—the big wind that blew a stepped-up atomic program right into its Tennessee service area. As a result of soaring electric power demands occasioned by the broadened atomic work, TVA again is head over heels in a power expansion program, asking deficiency appropriations rather than awaiting the new fiscal year opening July 1. In the meantime, it is faced with the prospect of calling on neighboring private utility systems next winter for 110,000 kw of capacity to carry the winter peak load. TVA has asked Congress for a $12,000,000 deficiency appropriation for the current fiscal year, all of which is for power construction. It plans a fourth thermal-electric unit at New Johnsonville, on the west side of the system, and an entire new steam plant—Widow's Creek, in northeastern Alabama. The remainder of the deficiency request would cover deficits in this year's construction budgets for the first three New Johnsonville units and South Holston Dam.



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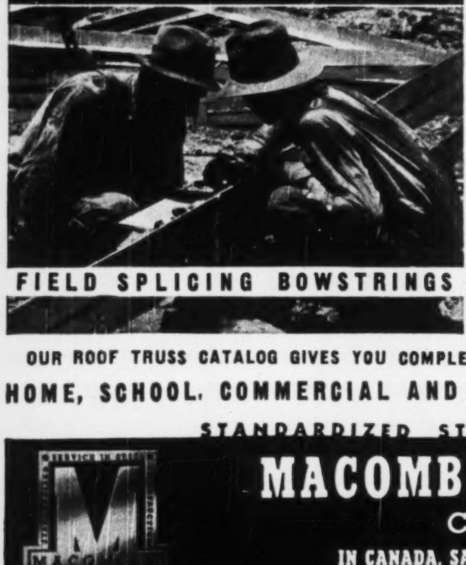

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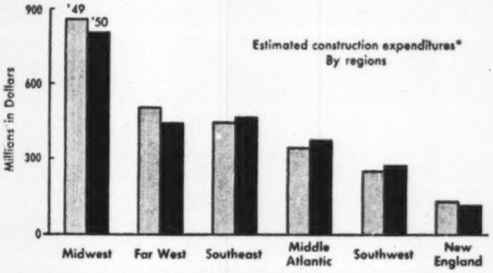
CONSTRUCTION TRENDS



*Covers power companies, state authorities and municipal systems
Does not include REA and Federal Projects
Includes some machinery

Data: Electrical World

UTILITIES AND CONSTRUCTION— 1950

Will the public utilities again be leading construction customers in 1950? The answer is emphatically Yes. The Dept. of Commerce has estimated total utility construction for this year at $3.25 billion. The biggest part of this total will be accounted for by private electric utilities. Commerce figures they will spend $1.35 billion, within 6% of last year's total.

Actually, construction in the electric power field is likely to be even more important than the above figures indicate. A more recent survey by Electrical World shows that power companies, state and local authorities have construction budgets for 1950 virtually equal to 1949. Some of this money goes for machinery. But it still seems a good bet that construction by this group will come to $1.5 billion.

To get the total amount of construction accounted for by the power industry, you have to add in projected federal expenditures. The Bureau of Reclamation and Army Engineers are putting approximately $440 million into power projects. And the Rural Electrification Administration is likely to duplicate its 1949 investment of $325 million, most of which will be for erection of new towers and lines. That will make total construction in the electrical field over $2 billion, or more than 10% of all the new construction expected in 1950.

Which areas will get most of this utility construction? Electrical World's survey makes it clear that the heaviest concentration will be in states east of the Mississippi. Much the biggest amount (see chart) will be in the Middle Western states. And of this, the industrial area around the Great Lakes is scheduled to get the greater part. Next comes the Southeastern region, with the Far Western area third. States in these three regions will account for over half of all 1950 construction by electric utilities.

There will be more utility construction in the Southwestern states than last year. But the total is still small compared to the Eastern states. The Mountain and Pacific regions show substantial decreases in construction planned. New England again will have only small additions to its power facilities. Despite continuing proposals for a New England power development authority, nothing's been done yet.

The breakdown of private utility construction expenditures among types of work is significant. The heaviest spending will be for generating plants. And this is true even if you take only the estimated value of construction, excluding machinery. Next biggest item will be distribution lines within the cities. But utilities handle most of this themselves.

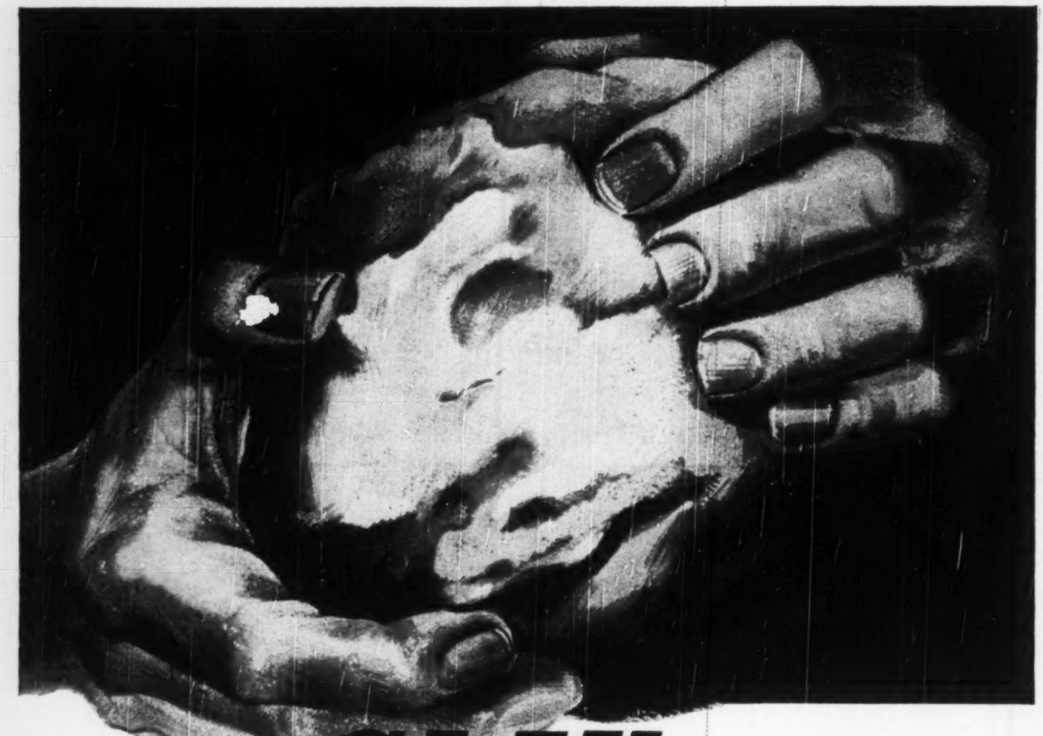
After generating projects, the most important jobs for contractors will be new transmission lines. These require erection of steel towers to hold wires, as well as buildings for substations. The REA cooperatives are also making large expenditures for transmission lines. General buildings, such as office buildings, are the smallest item in planned construction by power companies. But they will still come to $100 million.

What about the years after 1950? Will utilities continue to place a strong prop under construction activity? Here again the answer seems to be Yes. Demand for electric power is still increasing about 7% per year. So generating and transmission systems must be enlarged to keep pace. This does not mean that every year will be as good as 1949 or 1950. But a sharp or sudden drop likewise appears out of the question.

The peak of electric utility construction probably took place in 1949. Expenditures of private power companies and local authorities will decline slightly this year and by 1955 are likely to be as much as 20% below the 1949 level. Meanwhile, however, expenditures by federal agencies in this field are rising in 1950 and—if congressional favor continues—are expected to keep rising for several years. The net result may well be a levelling off of construction in the power field not far below the 1950 rate.

Other types of public utilities are apt to reduce their construction programs more rapidly than the electric industry. Railroads, for example, have pretty much caught up with their postwar construction needs. There probably will not be so many large gas pipeline projects after this year. And the Bell System also is catching up with the demand for telephone service. But total utility expenditures can't sag too badly.

The best way to guess what public utility construction will be over the long pull is to watch residential construction. It's the number of new homes that chiefly determines how much has to be spent for extensions to power facilities, gas pipelines and telephones.



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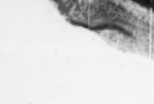

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EDITORIALS

That Shelf of Plans

KEEPING A SHELF FULL of plans for new construction projects during good times so that many of the projects can be started quickly following the first signs of a business depression is a sound program for public works. It is also one that is difficult to keep active and well balanced. That conclusion stands out from the discussion in last week's issue of federal financing of advanced planning for public works. It serves to point to the need for further study of how to keep up a steady flow of advance plans to the shelf so that there always will be projects to replace those that are translated into actual construction and those that are abandoned for one reason or another.

The new requirement that recipients of loans for planning must show good reason for keeping any projects on the shelf for more than three years or else be prepared to repay the loan will add to the difficulty of meeting this condition. Its effect, however, can be offset if communities will use their own funds for preparing plans and specifications for projects of no immediate urgency, and utilizing the borrowed federal funds for plans for projects that must be let to contract soon.

Planning commissions ought to be a great help in developing a well balanced program, especially if made up of men of some vision who can take a long-range view of the probable development trends in a particular community or region. Integrating local and regional planning will help greatly in discovering projects that otherwise might be overlooked.

Dreams Can Come True

EVERY CITY should have a dream project—a major improvement that seems impossible or impracticable to carry out, yet toward which planning and hopes are continually directed. There is no better way to keep a generally progressive attitude alive, and frequently the dreams come true.

Examples of such improvements are readily recalled. The St. Louis municipal center is one. The elevation of the New York Central tracks through Syracuse is another. San Francisco's Bay Bridge climaxed decades of wishing. The great freeways, in such places as Detroit, Dallas, Denver, San Antonio and Los Angeles, represent long-deferred hopes fulfilled. Youngstown, Ohio is just completing a piece of river front face-lifting in which the old Pennsylvania R.R. station was torn down to make way for an 8-lane bridge, and a new modern station built two blocks upstream.

All these are of a pattern with a super project that became assured last week—Pittsburgh's transformation of its blighted but superbly located "Point" area. With the signing of contracts between the Urban Redevelopment Authority and the Equitable Life Assurance Society, work can now begin on the purchase of 23 acres of land at the confluence of the Allegheny and Monongahela rivers on which three office buildings will be built in a park-like setting. Pittsburgh's Gateway Center will truly be a dream come true. Significantly it had to await that legal and financing device, the public authority, and the embracing of a new investment philosophy—direct ownership—by the great insurance companies. It had also to grow in the minds of Pittsburgh's citizens as a project that, in one way or another, had to be built.

From all advance notices Pittsburgh's waiting and hoping and planning will pay off handsomely. This success will generate new dreams. They, too, should be held onto, that they, too. may come true. Throughout the country every city, with old dreams and new, can take new heart at Pittsburgh's success. Dreams do come true.

A Method Worth a Try

WITH SOME LONG OVERDUE RAIN and snow replenishing its reservoirs at a painfully slow rate, New York City has come, at last, to think seriously of rainmaking by cloud seeding (see p 29). It took a Nobel Prize winner, Irving Langmuir, to impress the city on its possibilities; others had tried, without apparent effect.

In Schenectady, N. Y., last week Dr. Langmuir put on a laboratory demonstration for Stephen J. Carney, commissioner of the city's Department of Water Supply, Gas & Electricity. He offered to make available all GE's research findings. And perhaps most important, he gave this advice: get a competent meteorologist who has nothing to sell; let him start with small-scale experiments; much basic data must be gathered.

Not the least of these data relate to the legalities of cloud seeding (ENR Jan. 20, 1949, p. 57). But there are also scientific unknowns: Successful operations in the Southwest generally were not limited to so small an area as the city's 300-sq mi watershed. The cheaper method, dry ice seeding, requires air below freezing temperatures. The other method, use of silver iodide, can cause drought if overdone, according to Dr. Langmuir. Then, if the chemical is used, should it be sprayed from planes above or from ground generators below the clouds?

It was a combination of new water users, new water uses, no new sources and the lack of rain that brought on the present crisis. Attempts to impress an indifferent public with the need to conserve water are commendable, but as stated on this page last Dec. 15, only rain can save New York. It is encouraging to see that serious consideration is being given to a scientific approach—not proven, but promising.

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ENGINEERING NEWS-RECORD

FEBRUARY 23, 1950 VOL. 144 NO. 8

BPR proposes taking over additional secondary roads

Smaller local responsibility for adequate roads would make existing state aid sufficient, report asserts—Existing legislation sufficient for proposal

A substantial solution to the problem of adequate rural local roads is available under existing federal law, the Bureau of Public Roads believes.

Practically all such roads which serve 100 or more vehicles daily and which aren't now a part of the federal-aid secondary road system—90,000 to 100,000 mi—could be put into that system under existing law, according to BPR. Such a move, with the abandonment of 400,000 mi of nonessential rights-of-way, would leave non-federal local road mileage at about 1,800,000 mi.

• State aid sufficient then—Stripped to such dimensions, local roads would be able to proceed adequately with such financial help as states now give counties and localities. But to do so, BPR added, it would require equitable distribution of state aid and clear-cut legislation assigning management and supervisory responsibility.

The BPR study was turned over to the Senate Public Works Committee last week.

• Affects pending bills—Hearings on the Young-Stennis-Kerr bills last year led to the Senate committee's request for the BPR study. Those bills propose funneling $100 to $150 million a year of federal-aid highway money direct to localities. There, the money would be disbursed by local road authorities without interference or supervision by the federal government or state highway departments. The BPR report will be much consulted by both Senate and House committees in considering local road measures this session.

The report aimed to present facts—not to make recommendations. But conclusions can be drawn from its statements. In appraising the fiscal ability and responsibility of various governmental units for support of local roads, the report reached the heart of the problem. After describing the trend toward transferring local roads and attached debt obligations to states, the report said this:

"The efforts on the part of many local units to be relieved completely of the financial burden and at the same time to exercise complete local autonomy in the expenditure of road funds is not only incompatible with sound principles of government; it is an inordinate departure from any reasonable concepts of equity. Further, it is popular grass-roots politics to promise relief from the local tax burden by promoting the shift of that burden to superior levels of government. This practice, which has been successful to a considerable degree, frequently generates a reluctance on the part of local units to continue their financial support."

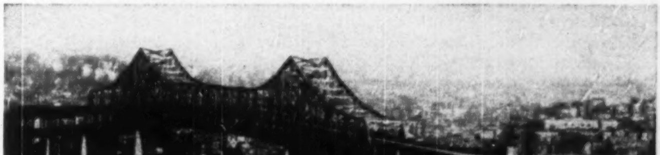
• Half are deficient—Appraisals of needs on 726,000 miles of local roads showed that 49 percent have deficiencies that need correction, the report said. Applying this percentage to the total of 2,500,000 miles of local roads in the nation, there are about 1,200,000 miles now in need of improvement. Probably more than one-tenth of the deficient mileage is within the federal-aid secondary system, as now designated or to be extended.

Reports from local road agencies indicate that $6,000 per mile is a conservative estimate of the average overall cost for improving the deficient roads. For 1,200,000 miles, the total existing need is $7.2 billion.

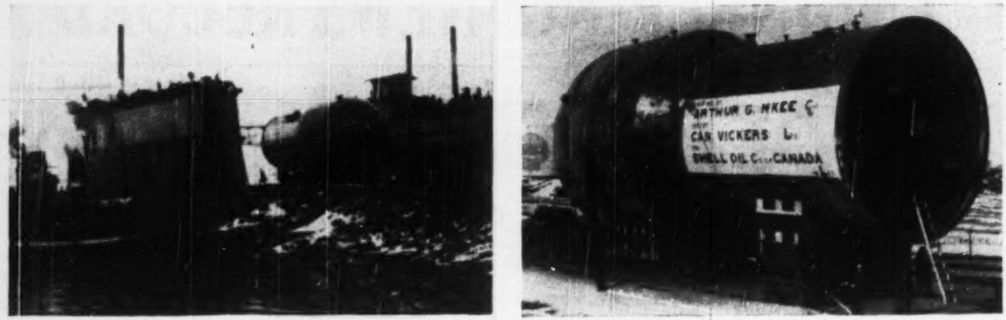
To overcome present deficiencies, the report says, would require annual expenditures of $720 million for a 10-year program, $480 million for 15 years, or $360 million for 20 years. Costs of surface replacements that would have to be made during the same periods would be absorbed by adequate maintenance, according to the study.

In 1947, maintenance expenditures on local rural roads totaled $453 million. An adequate level of maintenance can be attained, the report estimates, with an average annual expenditure of $500 million.

• $894 million yearly—Total average annual costs—exclusive of debt service—to build up the entire local road system to required standards in 20 years would amount to $894 million, the report shows. This annual total includes $360 million for construction, $500 million for maintenance,



THIS'LL SAVE TIME—Here's what you see these days from the top of the Bunker Hill Monument. It's Boston's Mystic River Bridge (ENR Nov. 10, 1949, p 13). Toll collection points for both decks are shown at right. Bridge is to be opened soon.



MOVING DAY—One of the world's largest shop-made pressure vessels, this 105-ton regenerator posed a problem to construction men in Montreal, who had to move it from the shipbuilding yards of Canadian Vickers to Shell Oil Co.'s most modern Canadian refinery eight miles away. After launching, the regenerator was picked up by a 25,000-ton floating drydock and moved five miles down the St. Lawrence River. There, the vessel and the special 42-tire trailers onto which it was maneuvered when put into the drydock, were towed three miles to the refinery. The necessary 32x29 ft clearance required power and telephone wires to be raised. Steel plates were laid over weak spots in the road. Drag props (above right) were used to keep the load from rolling during the two-day truck trip. (Associated Screen News Photos.)

and $34 million for administration and engineering. To accomplish the rebuilding in 10 years, the cost would be $1.27 billion a year; in 15 years, $1.02 billion.

Debt service has to be added to these amounts to get the annual total requirements. In 1947, the report says, debt service of local road agencies amounted to $115 million.

Including debt service, the actual 1947 expenditure for all local road purposes was $884 million. Little would have to be added, the BPR document points out, in order to accomplish—with efficient management—a planned program of satisfactory improvement in 20 years.

• Let George do it—For the overall mileage of local roads, there has been a strong trend toward shifting more and more of the financial burden to states and the federal government. In 1927, local roads got 81.2 percent of their money from local sources and 18.8 percent from the states. By 1947, localities were paying 39.4 percent of the bill, states 56.4 percent, and the federal government—for the federal-aid secondary system—4.2 percent.

Failure of many local government units to hold up their end of the financial load—after state revenues have become available to them—raises grave doubt of their interest in working out a solution of the finance problem, the report asserts.

• Debt greatly reduced—Outstanding road debt of county and local units has declined steadily from its peak of $1.8 billion in 1929, the BPR study shows. At the beginning of 1947, the debt was estimated at $870 million. Debt service that year amounted to $85,000,000 in repayment of principal and $30,000,000 in interest, but debt increases in several states raised the total to $879 million at the end of 1947. More than half of the total was accounted for by the county and local road units of four states.

"To better the job of improving and maintaining local roads, the first need is better laws." The report makes that flat declaration and then goes on to say what is meant:

"A good law is one which fixes responsibility and accountability, establishes standards of performance, embraces broad guides for administrative bodies in determining procedures, provides for adequate financial support, and creates efficient administrative machinery.

"The backbone of the state-local relations law should be a state-aid program managed by the counties or local units with state assistance in planning, establishing priorities of improvement, and selecting road systems. Mandatory and voluntary features should be embodied in the law; the former should be confined largely to reporting and accountability of the local units for funds received and expended, state approval of plans and programs, and adequate provisions to insure a minimum standard of performance."

Insurance firms underwrite turnpike

New Jersey's Turnpike Authority has concluded a $220 million financing program involving forward commitments from 53 investors. As a result, Chairman Paul L. Troast says, construction of its 118-mi toll highway can proceed immediately toward an estimated opening date of November, 1951.

This type of financing, whereunder funds are pledged by investors in return for a $\frac{1}{8}$ of 1 percent annual commitment fee, will save the Authority as much as $12,000,000 in financing costs, Troast says. Under it, funds will not draw interest until they are drawn upon by the Authority, which will issue covering bonds as advances are made. Smith, Barney & Co., New York, was financial adviser in the development. The bonds will pay 3.25 percent and will mature in 1985, subject to retirement 10 years after issuance at a 3 percent premium which will decrease toward par as the maturity date nears. The bonds will not be backed by the state's credit, but will be revenue securities solely.

New Jersey institutional investors drew a lion's share of the business, with 13 of them taking more than half the total. The Prudential Insurance Co. took $75,100,000, and six New Jersey state firms took a total of $25,000,000 more.

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Hudson River intake low bid is $2,387,000

There were 17 bids opened this week (Feb. 20) on the Hudson River intake and pumping plant to be built near Chelsea, N. Y., as a 100-mgd emergency water supply for New York City.

Low bid was $2,387,000, submitted by Baltimore Contractors Inc., and McCollom & Murphy for an electrically operated plant. Their bid on the alternate, diesel power, was also low at $2,950,000. Bidding was on two lump sum items: Construction of the plant (electrical and diesel alternates) and its operation over a four-month period.

Stop order on military rental housing to end soon; 31,000 units requested

Two-months-old ban on new applications revealed by Johnson as move to let services catch up on requests—2,250 now building

Defense Secretary Louis Johnson is expected soon to lift the ban on new applications for military rental housing backed up by FHA insurance under the Wherry Act of last August. Even before he issued his stop order of Dec. 16, the three military services had approved preliminary plans for 31,000 dwelling units. During the interim, those projects have been moving ahead through successive steps toward culmination.

• Construction barely started—Construction already has begun on nearly 2,250 units—1,801 at five Army posts and 442 at two Air Force projects. The Navy has certified one 200-unit project to FHA, the first of 17 planned for 7,830 dwellings. Air Force recommendations to date comprise 24 projects of 12,445 units, and the Army has approved rental dwellings totaling 11,590.

All these projects, totaling 31,865 units, have been going forward without interruption during the temporary shutdown on new applications. Secretary Johnson stopped applications last December to let the Defense Department catch its breath and survey the situation.

Defense Department's housing commission planned this week to recommend reopening the door to new applications -- probably with some strings attached. One such string would require that first attention be given military installations having the greatest need.

The stop order did not affect the Wherry Act projects for which proposals had been received or scheduled. The order shut off only the receiving of new proposals for military rental housing.

• Housing incentives furnished—Public Law 211—the Wherry Act—added a new Title 8 to the National Housing Act. It offers additional incentives to private builders and contractors, through FHA mortgage insurance, to erect rental housing for military and civilian personnel in areas adjacent to military reservations. The armed forces are authorized by the act to lease such land and to furnish utilities for the housing projects on a long-term basis.

These rental housing projects do not come quickly to fruition. The whole enterprise is new, and the military forces, as well as the private builders, have had to learn the ropes. At the beginning, some difficulties and delays were experienced by private builders in getting and keeping the approval of the military commandants, especially when commanders changed during negotiations. These difficulties have largely been solved.

• It takes time—As as illustration of the time-consuming steps involved, take a look at the Army's worksheet. The Army has approved projects for 11,590 units.

Of these projects, it has asked the sponsors—private builders—to submit proposals for 10,990 and has selected the sponsors from among the bidders, who submit both plans and prices, for 6,950 units.

These selected sponsors have to be certified by the Army to FHA. If the FHA field office in the area approves the project proposal, the way is cleared for signing the mortgage insurance contract. First, of course, the builder has to find a lender who will put up the money and take the mortgage. When all is arranged, the builder can break ground.

Out of the Army's 11,590 approved units, the builders so far have put homes under construction at Fort Knox, Ky., Fort Meade, Md., Army Chemical Center, Md., Camp Holabird, Md., and Carlisle Barracks, Pa.

Among the insurance contracts under commitment, FHA plans to close one scheduled for Fort Bliss, Tex., March 7.

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North Carolina road work sets new records monthly

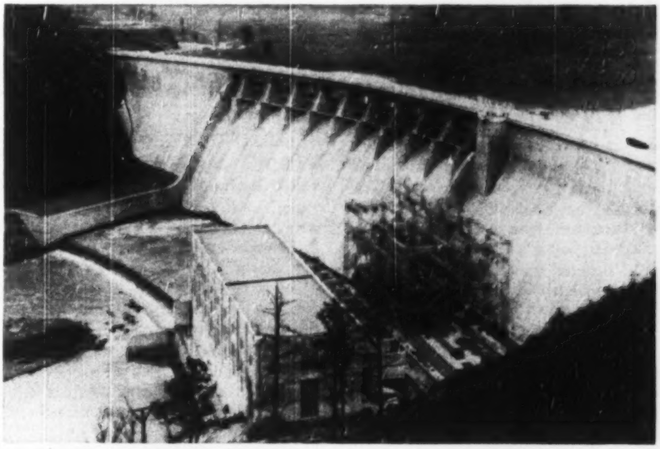
North Carolina's Highway Commission is setting records for bid asking and contract letting.

It was working on its third record in two months this week, after having called bids on 62 projects covering 811 mi of primary, secondary and rural road work.

Thirty-eight of the projects are part of the state's $200 million rural road program, financed by bond issue.

The bids were asked on Feb. 13 and 15, with separate lettings scheduled for Feb. 28 and March 2. The two letting dates were set to prevent contractors from bidding on more work than they can handle at one time. One such case has arisen already, commission officials assert. Commission review of all bids will be held March 7.

The combined letting will be the largest for road work in North Carolina's history, both in mileage and in number of projects. Last month, the commission accepted bids totaling $4,745,400 on 48 projects involving 384 miles.



ARMY'S LATEST—Allatoona Dam, built for the Corps of Engineers on the Etowah River, near Cartersville, Georgia, took less than four years to build. Ground was broken May 1, 1946, and first power was generated this month (ENR Feb. 16, p 12). National Constructors, Inc, made up of Arundel Corp, Baltimore; L. E. Dixon Co, Los Angeles; and Hardaway Construction Co, Columbus, Ga., was general contractor on the $41,000,000 job.

KEEPING NEW ORLEANS DRY—For the third time, Army Engineers opened the Bonnett Carre spillway 30 mi above New Orleans to take the top of a flood crest pouring down the Mississippi River. Here, officials of the Mississippi River Commission, headed by Brig. Gen. Peter Feringa (holding life jacket) watch as a wooden "needle" is pulled from one of the 350 bays in the 7,000-ft concrete spillway. Other needles will be pulled as the crest moves downstream to keep a steady gauge at New Orleans. Federal law requires that the spillway be opened whenever a 20-ft crest is reported approaching the city, much of which is below sea level. With a crest of 20.3 ft predicted for Feb. 18, opening the spillway was expected to lower it by 2.5 ft, passing the excess water into Lake Pontchartrain and thence into the Gulf of Mexico. The spillway was opened first in February, 1937, for 37 days and again in 1945, for 58 days. (Wide World Photo.)

Waste disposal troubles Los Angeles

Waste disposal was creating problems in Southern California this week.

In Los Angeles, the city's first municipal rubbish incinerator, a $1,000,000 item of which four more are to be built, faces a shutdown, charged with being a nuisance and operating inefficiently.

• Too little, too much—First, officials found it was operating at only 8 percent of capacity, which is 480 tons daily. The Board of Public Works, pointing out that it couldn't operate efficiently on a small volume of rubbish, ordered all rubbish collectors to use the plant, at $2 per ton burned. Rubbish collectors complied with a mass delivery which jammed traffic and left 100 trucks awaiting a chance to unload. Some said the collectors planned it.

Then came charges that the incinerator was scattering large amounts of fly ash. Samuel A. Greeley, of Greeley & Hansen, Chicago engineering consultants, said the fly ash could be reduced to reasonable levels, but never eliminated. He added that the incinerator burns rubbish efficiently, but that it must be determined whether it can handle 480 tons daily. Operations are to be studied by Greeley, with the possibility of a shutdown for changes. Greeley and Samuel M. Clarke are making a five-month study of Los Angeles' incinerator program and will make recommendations on changes in the municipal incinerator after the study is completed.

• Lemons sour enough—In Santa Barbara, meanwhile, a suit has been threatened against a sewage disposal plant under construction for the city. A. H. Koebig, Jr., of Koebig & Koebig, assured the city that the $750,000 plant will not be a nuisance. A fruit packing firm threatened suit if odors or gasses damage lemons in process or affect employees.

Koebig replied that the state had granted a permit after hearing protests by the fruit company and others. And Koebig added:

"I have been practising sanitary engineering since 1910 and I have never known the state Board of Health to grant a permit where the sewage treatment plant has proven to be a public health nuisance or to be injurious to adjoining industries."

St. Lawrence hearings to start next week

House hearings on the perennial St. Lawrence Seaway and power project will open next week (Feb. 27) and extend through March 10—for proponents. Hearings for opponents will begin May 6, the House Public Works Committee announced.

Army Engineers, cabinet members and state governors are expected to appear in favor of the project. Possible new support may be forthcoming from steel industry interests who may be dependent in future years on iron ore imported from Labrador.

Elsewhere on the St. Lawrence front, the Federal Power Commission designated April 5 as the date for oral argument on the decision of an FPC examiner who recommended against New York State Power Authority's application to develop St. Lawrence River power without the seaway. Exceptions to the recommendation were filed, in addition, by the National St. Lawrence Project Conference, the Aluminum Company of America, the St. Lawrence River Power Company and FPC's staff.

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AEC issues report on atom bomb blast design

Following closely the publication in ENR (Jan. 26, 1950, p 24) of the first article to be cleared by the Atomic Energy Commission on structural design to resist atomic bomb blasts, the National Security Resources Board, Feb. 9, released an AEC study on the subject. Entitled, "Damage from Atomic Explosion and Design of Protective Structures," it was prepared jointly by the AEC and the Department of Defense. Presidential Assistant John R. Steelman, acting chairman of the NSRB, has sent copies of the report to all state governors for guidance in the development of civil defense plans. The report discusses the effects of the bomb blasts in Japan, estimates possible effects on U. S. structures and gives recommendations for protective construction.

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New bridge at Bonneville

Army Engineers will build a new swing bridge across the approach channel just downstream from Bonneville Dam. It will replace one erected in 1936 to handle freight cars hauling machinery to the power house. The new structure will be lighter and capable of being operated more rapidly than the existing structure. It will serve vehicular traffic.

RFC cuts off aid, Forecloses on Lustron

Reconstruction Finance Corporation decides it can't wait longer for company to pay off its debts

After advancing four years of time, and more than $37,000,000 in cash, the Reconstruction Finance Corporation decided last week it would gamble no further, and ordered court action to foreclose on Lustron Corp., of Columbus, Ohio.

The action brought to an apparent end a government experiment in mass-produced housing that started in 1946 and held out the prospect of enameled-steel houses of radical design, coming off assembly lines at a rapid rate. It came, too, after what appeared to be desperate efforts to shore up the tottering Lustron dream by use of the Lustron houses on military bases and in at least one privately operated mass-housing development (Park Forest development, near Chicago) (ENR Nov. 24, 1949, p. 17).

Just what will happen to the company's huge plant at Columbus wasn't at all clear last week, but Washington observers thought it a foregone conclusion that the plant would continue to manufacture houses. The war-built plant probably will revert to RFC, which might then dicker with at least two groups and three individuals—all with house-producing ideas in mind—who are reportedly interested in taking over the plant.

- **Never produced**—The Lustron story to date is an involved one, and no one has yet put his finger officially on why the houses wouldn't sell. Reasons given by observers and witnesses at various hearings on loan applications, however, centered around: Lack of buyer acceptance of the radical-appearing houses; too much overhead expense in the plant; failure of dealer-builder arrangements; high cost of the completed structure (up to $10,500 complete).

The company gots its first loan (of $15,000,000) from RFC in 1946, and RFC got a promise from Carl G. Stranlund, company president, of a production of 17,000 houses by 1949. But the company didn't turn out its first house until November of 1948; and by Jan. 5, 1950, it reported it had shipped less than 2,000 houses in the 20 months period which ended Dec. 31, 1949.

Since its original loan, the company went to RFC for $22,000,000 more. But even when it was at top production—26 houses a month—last August, it was losing money on every house. RFC officials figured the breakeven point would be 50 houses a day. Lustron officials said 35.

Interim reclamation law moves ahead

A new step toward broadening of the reclamation law was taken last week when the House Public Lands Committee incorporated in a new bill the recommendations of the Budget Bureau.

The bill, for which easy approval is expected, leaves numerous points open, pending a report by the President's Water Resources Policy Commission, due late this year. As such, it represents less than the final broadening of reclamation law which is to be expected.

The new bill omits seven project features which would have been classified as non-reimbursable costs under the legislation before the committee last year (H.R. 1770) and approved by the committee.

These provisions were held up pending a report by the Policy Commission. Similarly held up was another committee-approved provision which would give statutory authority to the existing practice of using interest payments on federal power developments to subsidize irrigation works on the same projects.

As rewritten, the only non-reimbursable features of reclamation projects will be flood control and navigation works and fish and wild-life propagation features. It also authorizes the Reclamation Bureau to furnish recreational facilities at reservoirs it controls. This last is intended as an interim move, until the Policy Commission makes its report.

The Policy Commission, meanwhile, held its second meeting last week and determined the make-up of its technical staff.

Sen. Joseph C. O'Mahoney, Wyoming Democrat, went to the committee last week after the committee declined to go to him. He had proposed that the commission attend a joint session of the Senate Interior Committee and the House Public Lands Committee. The commission could see "no positive benefit" in such a visit, and so declined it. O'Mahoney's visit followed.

Fatal LIRR accident on construction track

The sideswiping collision on the electrified Long Island R. R. at Rockville Centre, Feb. 17, which killed 29 passengers and injured 105, occurred on a temporary "gantlet track" that had been built to provide space for the construction of grade separation structures. For a distance of about 3,000 ft, the eastbound track had been closely superimposed on the westbound track.

This type of track layout is used frequently on double-track lines during construction operations to free the space occupied by one track. It is better from an operating viewpoint than the reduction of the line to a single track past the construction work.

Single track requires the installation of switches where the abandoned track is cut into and where it leaves the remaining track and it requires operation of both switches for each movement in one direction. (This was eastbound on the gantlet at Rockville Centre.)

With the gantlet layout, only the left-hand rail in each track is cut at two points to permit the installation of a switch frog so that the left-hand rail of the superimposed track can be laid between the rails of the opposing track.

At the time of the accident at Rockville Centre, the westbound train was operating through the gantlet on the undisturbed track. The eastbound train, operating on the cut-in track, is believed to have run past a red light on the signal system showing the gantlet to be occupied. It collided with the westbound train from the side, telescoping the left-hand side of the coaches on both trains, resulting in the nation's worst railroad disaster since 1946.

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Fluor Corp., AEC discuss Arco reactor contract

Contract negotiations are underway between the Atomic Energy Commission and the Fluor Corp., Ltd., Los Angeles, for construction of a materials testing reactor to be built at Arco, Idaho.

Fluor was selected after consideration of 80 firms. This is the second reactor scheduled for Arco. The first is under construction.

The contract being discussed with Fluor covers more than 50 percent of the construction cost, estimated to be at least $20,000,000. The Fluor portion would include the reactor itself, the reactor building and auxiliary operating facilities. The need for speedy construction requires starting the unique structure before specifications are completed. Revisions of design and specifications will be made as work progresses, to take advantage of the latest research results. Thus, AEC has to use a negotiated form of contract rather than competitive bidding.

Western Canada construction plans add railroad, power jobs

New power development scheduled in Canada

Calgary Power, Ltd., and British Columbia Power Commission name projects in western provinces

Two power developments and discussion of a third enlivened western Canada's heavy construction circles this week.

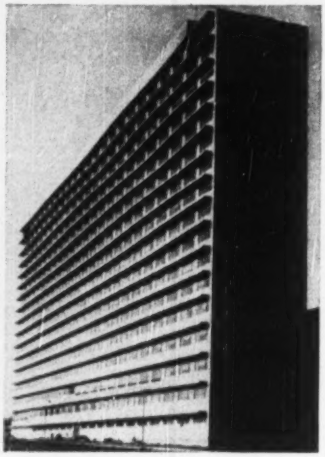
Calgary Power, Ltd., will develop the Spray River where it turns north to enter the canyon leading to Banff, Alberta. And the British Columbia Power Commission is undertaking a development on Lower Clowhom Lake to supply the Sechelt area, 30 mi up the coast from Vancouver. Farther inland, there's more discussion on a long-range program on the Kootenay River near the B. C.-Montana border.

• 82,000-hp project seen—The Calgary Power plan calls for a dam where the Spray River enters the canyon, reversing the river's flow into the Spray lakes. Canals would conduct water about 15 mi from the lakes through the Goat River valley and Whitman pass, then drop it 900 ft to a powerhouse at the foot of Mt. Rundle. There would be 82,000 hp available there.

The water then could be used at another projected development at Canmore and flow on into the Bow River, thence to Calgary and South Saskatchewan. The water can be used for power no less than six times. The Spray River project would impound waters of the Spray and Goat Creek and valley runoffs in summer and permit 700 cfs to go down to the Bow River. It would retard spring and summer flows, but increase flows in the winter.

• Third in four years—The B.C. Power Commission project, third in four years by that agency, includes a dam at Clowhom Falls on Lower Clowhom Lake and a powerhouse of 15,000 kw at tidewater, at the head of Salmon Arm. Plans call for a dam and spillway at El. 125 to provide 2,500 acre-ft storage. Dam and spillway would be 325 ft long and 25 ft high in the initial development. Estimated cost of dam and powerhouse is $689,000.

The task facing the International Joint Commission on the Kootenay proposal is an enormous one. Essentially, it must reach agreement on division of the waters flowing across the Canadian-U. S. border, determining how much should be available to each country for irrigation, power and other uses. The dam would have significant flood control capabilities, not only close by but on the lower Columbia River as well. The matter is scheduled to come before the commission again this summer.



OPEN FOR BUSINESS—Taking advantage of arrangements with contractors, the Veterans Administration has begun receiving patients in its new Fort Hamilton (N. Y.) hospital. The structure (ENR May 27, 1948, p. 88) includes the 16-story main section shown here, connected to a five-story front section. The broad southern face of the main section insures maximum sunlight to 95 percent of the 1,000 beds in the hospital. (Wide World Photo.)

Sinking airport threatens structures at Los Angeles

Another multi-million dollar, improved piece of land in the Los Angeles region—the International Airport—is sinking and engineers have predicted structures on the site are in danger of serious damage.

City Engineer Lloyd Aldrich issued a report saying the area was definitely sinking at the rate of 1 ft every 20 years. Uneven subsidence, the report said, will tend to crack buildings. The rate of subsidence might also be increased with construction of additional heavy buildings.

The earth movement is caused by four major earth faults, as well as numerous minor faults, in the Los Angeles area, Aldrich said. The sinking of Long Beach-Terminal Island region, south of the airport in the Los Angeles Harbor district, already has caused its abandonment.

Speed rail extension for 1951 completion

Pacific Great Eastern Railway to let contracts for bridges, right-of-way on Quesnel-Prince George route

British Columbia's Pacific Great Eastern Railway will step up work on the 87-mi extension from Quesnel to Prince George, aiming at completion in the fall of 1951. Bids are to be asked this year on two bridges and the remaining 40 mi of right-of-way, officials have announced.

Plans are being completed now for bridges over Cottonwood Canyon and Abau Creek. Bids are to be asked this spring on the substructure, steel fabrication and erection, which is estimated at $1,250,000.

• Half done this year—Last year saw the award of contracts for 47 mi of right-of-way, on which work should be finished this year. The remainder probably will be let in two contracts, with a mid-1950 completion date specified. The two main bridges, though, won't be ready for travel before mid-1951. The Cottonwood Canyon structure is to be 1,020 ft long and 220 ft above the water. The Abau Creek bridge is to be 920 ft long and 135 ft above water.

Meanwhile, a $90,000 contract has been awarded for turnouts, including switches and switch stands.

• Weather slows progress—At the line's south end, PGE engineers are making slow progress, due to bad weather, on a survey of a rail route between Squamish, present terminus, and Horseshoe Bay, near Vancouver.

The survey complements one carried out on a road route, and aims at a cost comparison between the alternates. In announcing plans for rail extensions last year, B. C. Premier Johnson said the southern terminus of the railroad would be linked with Vancouver by a new highway along Howe Sound, through West Vancouver. But West Vancouver residents are complaining, costs seem high and the extension may be by rail. A battle is anticipated this spring in the legislature over possible property depreciation if the railroad extension is built.

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Bridge-borne radar next

St. Louis bridges may get radar sets to help guide towboats into the channels. Tests of this have been made from McArthur bridge by Westinghouse and Sperry Gyroscope.

New York gets serious about man-made rain

Citizens' group proposes gated dam across Hudson to bar salt intrusion, permit greater withdrawals

New York City water officials turned bullish on rainmaking last week. Commissioner Stephen J. Carney, of the Department of Water Supply, Gas & Electricity, traveled to Schenectady, N. Y., to consult Dr. Irving Langmuir on the technique and its possibilities. He came home convinced that the city should hire a meteorologist and meanwhile delve deeper into the legal problems: Who owns the clouds and what about damage suits?

Dr. Langmuir–Nobel Prize-winning consultant to General Electric Co., the Army Signal Corps and the Office of Naval Research in their combined rainmaking research–recently aroused the city with his statement that cloud seeding might solve its water problems. He was not the first to make this claim; Precipitation Control Co., of Phoenix, Ariz., had made the city a definite proposal last Dec. 14 (ENR Dec. 22, 1949, p 17).

Commissioner Carney said he would recommend to Mayor William O'Dwyer that a consulting meteorologist be started on gathering basic weather data.

• **Another scheme**–Meanwhile the Citizens Budget Commission, a private civic group, submitted to Board of Water Supply Commissioner Irving V. A. Huie, its own plan for relieving the water crisis. Lawrence T. Beck, a trustee of the group and a civil engineer, proposes a gated dam be put across the Hudson River below Poughkeepsie to create a 3-ft head above mhw. This, it is said would stop salt intrusion and store 70 billion gallons. Mr. Beck says 434 mgd could then be pumped into Delaware Aqueduct from the Hudson.

The structure would pass regulated flow through 60-ft gates, pass river traffic through two locks and carry highway traffic across the river.

It would cost $200 million and could be finished in 1956, according to its proponents.

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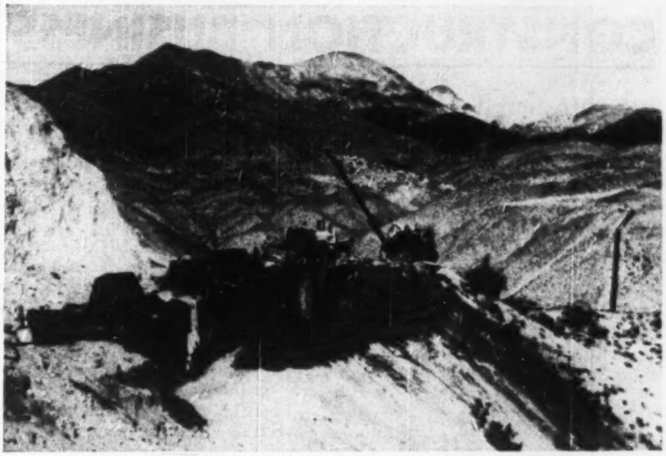
Road referendum upheld

Missouri's Supreme Court has upheld legality of an impending referendum on the 4-cent gasoline tax law aimed by Governor Smith at financing rural roads. Supporters of the embattled tax measure had tried to prevent a statewide vote on it.



RUSH JOB–Los Angeles Department of Water and Power workmen are shown near the end of a 10-day, round-the-clock job replacing a 100-ft section of the Los Angeles Aqueduct which washed away after a break near Mojave. Pine Tree Siphon can be seen on the hill in the background. Workmen made a soil-cement-based mixture to fill the washout and replaced the 8.5x9 ft concrete conduit. (Dept of Water and Power Photo.)

Viaduct approved in Boston harbor

Massachusetts legislature has approved a $2,000,000 viaduct between Boston and Long Island, in its harbor. Designed by the Crandall Engineering Co, Boston, it will be built under direction of the city's Institutions Department.

The viaduct, which with its approaches will have an overall length of 16,500 ft, will be of steel. The viaduct itself will be 3,450 ft long, with a 32.5-ft roadway and a 4-ft sidewalk. It will be supported by two abutments and 15 piers, for which pile foundations have been specified. Piers will be of concrete, with granite facing above low water.

The superstructure will have 13 250-ft trusses, one of them a through truss having a channel clearance of 51 ft at high water. There will be a 60-ft approach span at Moon Island, the shore end, and two 70-ft approach spans at Long Island. These will be of plate girder construction. Floor systems for roadway and sidewalk will be armored steel grating. The structure is designed for H 20 S 44 loading, and allowance will be made for carrying a 16-in. water pipe and other utilities. Approach roadways will be 24 ft wide, paved with bituminous macadam. The Moon Island approach will be 7,397 ft long, the Long Island approach 5,671 ft.

J. R. McGilvray is commissioner of the Institutions Department, Ralph A. Plunkett its plant superintendent. The department expects to save yearly enough to refund the construction loan. Financing will be by city borrowing. Long Island, accessible now only by water, contains a major hospital.

Army to decide location of Chicago water plant

Army Engineers will decide whether Chicago's $73,000,000 filtration plant goes 500 ft offshore in Lake Michigan. They got the problem after a public hearing at which the city favored this plan and the city Association of Commerce and Industry opposed it.

Public Works Commissioner Oscar E. Hewitt said the off-shore site would aid security in case of atomic attack. He said radioactive materials in water attach themselves to matter in suspension. A filtration plant, he said, removes all suspended matter. He added that the off-shore site, 400 ft north of the Navy pier, would give that pier a sheltered slip, and would not impede navigation or harbor development.

◆

Protest proposed dam

Citizens of East Burke, Vt., are protesting an Army flood control and power dam. One hundred signers of a petition against the proposal described the $13,000,000 structure unnecessary for either purpose.

CONSTRUCTION BUSINESS

Wins VA hospital contract featuring time premium

McCloskey & Co., Philadelphia, won on Wednesday the time-premium contract for a Veterans Administration hospital in Boston with a low bid combining lowest price with greatest speed of completion—$10,563,000 to complete in 630 days.

Bid price evaluation by Corps of Engineers specified that to each bid there be added $700 for each day of estimated completion time in excess of the number of days proposed by the bidder proposing the shortest completion time.

McCloskey's bid was lowest on both counts–time, and price regardless of time.

On evaluated price (price adjusted for time-premium), McCloskey was $354,000 or 3% below the next lowest bidder among 13–John A. Johnson & Sons, Inc., Brooklyn, N. Y., $10,896,000, 660 days (evaluated price $10,917,000).

Low bid was 13% lower in price and 14% in completion time than the government estimate—$12,090,000, 730 days.

Low bid was 18% under the high bid on evaluated price basis. High bid was by J. Slotnik Co., of Boston—$12,747,000, 730 days (evaluated price $12,817,000).

Otis Elevator won the elevator contract for $550,000, 4% under the bid of Westinghouse Electric Corp., only other bidder.

The Veterans Administration plans to advertise for bids on 13 major hospital construction projects during the remainder of 1950.

This is in addition to six hospital projects already in the works this year: three already contracted and three more currently advertised for bids.

◆

Housing starts hit 80,000 units in January

The current boom with 80,000 units started exceeds all previous January records and predictions, according to preliminary estimates by the Bureau of Labor Statistics.

That's 60% more than January a year ago, 50% above January 1948 and more than 100% above January, 1947.

Along about last August housing starts began to show strong gains over a year ago. December was the first month to show any real seasonal drop, and even that month, at 79,000 starts, was 50% above a year ago.

Now comes January showing an upturn from December, where the experts would predict a decline.

January and February are usually low months for the housing industry, and building starts do not get steam up until March or April.

But this January's 80,000 starts is good volume for the normal peak months that occur between April and August. Even if there were no seasonal upturn in building starts throughout 1950, an average of 80,000 starts a month would just miss totaling a million for the year.

The BLS estimate of housing starts for the month of October, 1949, has been revised upward to 104,300—making the total for the year 1,023,300 units started.

◆

Supreme Court upholds T-H closed shop ban

The Supreme Court has upheld the Taft-Hartley ban on the closed shop and the construction industry's practice of hiring through the union.

That is the effect of the court's decision making illegal the maritime industry's system of hiring halls.

What makes these hiring practices illegal under Taft-Hartley is the discrimination which results against nonunion workers. This is a violation of section 8 (A) 3 of the law.

There is no decision yet on whether it would be legal to hire through a union if equal opportunity to fill jobs were given to qualified non-union men.

◆

Retail lumber stocks

Retail lumber stocks December 31, 1949 were 9% above the previous month and 3.6% above a year ago, according to the survey of National Retail Lumber Dealers Association. Estimated total stocks amounted to 4.8 billion board feet.

The 9% increase in stocks for the nation's lumber yards as a whole in December compares with a bare 2% gain in the month previous. Only region to show a decline in December stocks was the East South Central. Most areas show gains over a year ago, but New England stocks are down 4%, Middle Atlantic 6%, and South Atlantic 0.5%.

Retail sales of lumber declined 19% in December, but were 17% above December, 1948.

Public housing dominates municipal housing

Public housing is taking a growing share of state and municipal financing of construction.

In the first six weeks of this year, total new state and local capital for construction was 12% ahead of a year ago, but all of the increase was money for public housing. Non-housing capital actually declined 8%.

Housing notes and bonds accounted for $131,000,000, or 43% of state and municipal financing for construction the first six weeks of 1950, compared with 32% a year ago.

Public housing is expected to account for a billion dollars or more annually for the next seven years.

State & Municipal New Capital for Construction (in thousands)

Total	1950		1949
Jan. 5....	$21,018	Jan. 6....	$8,778
Jan. 12....	8,933	Jan. 13....	20,213
Jan. 19....	62,869	Jan. 20....	79,915
Jan. 26....	129,664	Jan. 27....	49,969
Feb. 2....	32,454	Feb. 3....	41,090
Feb. 9....	43,898	Feb. 10....	67,165
	$298,836		$267,070
Public Housing			
Jan. 5....	$13,101	Jan.	$ ....
Jan. 12....	....	Jan.	780
Jan. 19....	2,200	Jan.	26,742
aJn. 26....	80,289	Jan.	1,416
Feb. 2....	10,184	Feb.	21,622
Feb. 9....	24,845	Feb.	34,392
	$130,619		$84,952
Total, excluding housing			
Jan.	$7,917	Jan.	$8,778
Jan.	8,933	Jan.	19,433
Jan.	60,669	aJn.	53,173
Jan.	49,375	Jan.	48,493
Feb.	22,270	Feb.	19,468
Feb.	19,053	Feb.	32,773
	$168,217		$182,118

◆

El Salvador to take bids soon for power project

El Salvador will soon ask for bids on construction of a $16 million electrification project to be started in July this year.

The World Bank has granted a $12.5 million loan to the El Salvador government for the project. Preliminary work is under way already, but the main project will start in July.

The proposed power plant will supply 30,000 kw immediately and later 60,000 kw.

◆

Canadian workers win vacation pay

Construction workers in six counties of Ontario will collect holiday pay following an order by the parity committee of the building trades in Hull, Gatineau, Pontiac, Papineau, Labelle and Temiscaminque counties. This will amount to 2% of weekly pay envelopes.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 74, went to press.)

Parking Facilities—Chicago Association of Commerce and Industry and State Street Council have proposed to Chicago City Council construction of 7 garages circling "Loop" district to cost $15,585,450.

City-County Building—Detroit-Wayne Joint Building Authority, Detroit, plans a $15,000,000, 10-story City-County Building. Harley, Ellington & Day, Detroit, will prepare plans for the new building.

Factory—Hotpoint Co. awarded contract to Abell-Howe Co., Chicago, for Cicero, Ill., 1,000,000-sq ft refrigerator factory of steel, brick and concrete at estimated cost of $12,000,000.

Dwellings – United Packinghouse Workers of America, CIO, Chicago, will build 1,000 dwellings at 47 St. and Cicero Ave., to be known as Landis Village. Estimated cost is $10,000,000.

Hospital – Wunderlick & Curlett, Long Beach, Calif., was low bidder at $7,898,000 for constructing veterans hospital at Salt Lake City, Utah. U. S. Engineers, San Francisco, opened bids on Feb. 16. Ashton & Evans and Ware & McClenahan, Salt Lake City, are architects.

Plant Extension—Canadian Celanese, Ltd., Montreal, will build a $3,500,000 extension to its plant located in Sorel, Que.

Research Hospital – Tennessee State Building Comn., Nashville, has just selected Bauman & Bauman, Knoxville, to design cancer research hospital at the University of Tennessee, Knoxville. Estimated cost of hospital is $6,000,000.

Schools – Quachita Parish School Board, Monroe, La., will hold election March 28 to vote $5,200,000 bonds for renovating and expanding school facilities in Quachita Parish.

Processing Plant—E. I. du Pont de Nemours & Co., Orange, Tex., will build a $5,000,000 nylon intermediates processing plant at Sabine River Works.

Pier—Baltimore & Ohio Railroad Co., Baltimore, will take bids Feb. 24 from selected list of bidders for construction and equipment of ore-handling pier in Curtis Bay, Baltimore. Plans have been prepared by owner and estimated cost of project is $5,000,000.

Residences—David D. Bohannon Organization, San Mateo, Calif., plans 240 residences in San Mateo to cost about $4,000,000.

Parts Depot – Ford Motor Co. of Canada, Ltd., Windsor, Ont., plans a parts depot in Sandwich East Twp., between Tecumseh Rd. East and Third Concession Rd. at approximately $4,000,000.

Hospital—Englewood Hospital, Englewood, N. J., plans hospital addition at about $3,000,000.

Airfield Improvements—U. S. Engineers, Jacksonville, Fla., plan family quarters, utilities and airfield paving at MacDill Field, Fla., to cost $4,412,000; U. S. Engineers, Mobile, Ala., plan family quarters, armament testing facilities and utilities at Eglin Field, Fla., to cost $3,459,000.

Plant – International Harvester Co., Chicago, will ask bids March 6 for branch building on 33-acre tract in Fairfax district, Kansas City, Kan. Estimated cost is $3,000,000.

Waterline—City of Dallas, Tex., plans 7-mi, 24-in. cast iron waterline from water plant at Carrollton to city limits. Estimated cost is $2,750,000. T. C. Forrest, Dallas, is engineer.

Veterans Building – Dept. of Public Works, Ottawa, Ont., plans veterans building at Hamilton, Ont., at about $2,500,000. Husband, Robertson & Wallace, Hamilton, are consulting architects. G. Brault, is architect for the owner.

School for Blind – Tennessee State Dept. of Education, Nashville, will take bids March 18 for the construction of School for Blind, at Nashville, for $2,000,000. Marr & Holman, Nashville, are architects.

Intercepting Sewer—Sanitary District of Chicago will receive bids March 2 for constructing Contract 10, Upper Des Plaines Intercepting Sewer in River Grove, Melrose Park, Stone Park, North Lake, Leyden and Proviso Townships. Estimated cost of the work is $2,000,000.

Generator Units—Public Service Co. of Oklahoma, Tulsa, has plans for two 6,000-kw gas turbine generator units in power plant at Elk City. Cost is estimated at $2,000,000.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Feb. '50	44.85	233.07
Building Cost	Feb. '50	356.48	192.70
Volume	Jan. '50	407	179

Activity This Week

As reported to ENR
(in millions of dollars)

Amount of contracts let

	Week of Feb. 23 1950	Cumulative 1950 (8 wks.)	Cumulative 1949 (8 wks.)	% chge
Federal	$22.1	$339.3	$149.7	+126
State & Mun.	4.5	422.3	375.5	+12
Total Public	$96.6	$761.6	$525.2	+45
Total Private	167.0	840.1	603.7	+39
U. S. Total	$263.6	$1,601.7	$1,128.9	+42

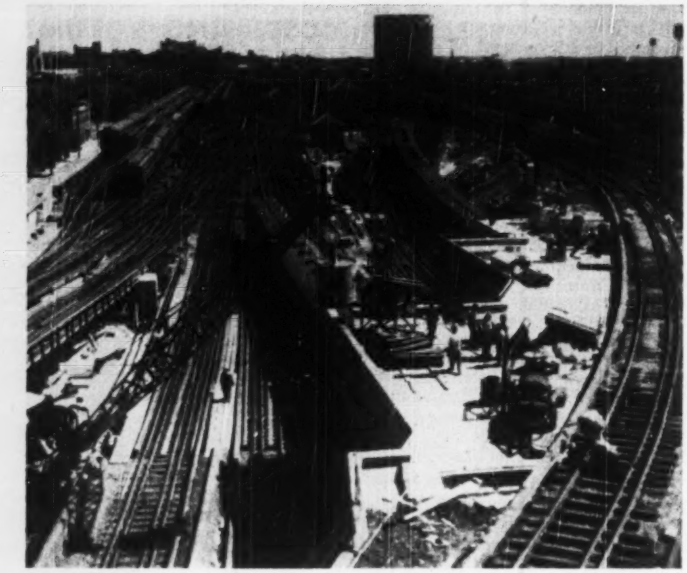
Contracts by type of work

	This Week	Cumulative 1950 (8 wks.)	Cumulative 1949 (8 wks.)	% chge
Waterworks	$4.9	$50.2	$19.9	+152
Sewerage	9.1	34.8	30.1	+16
Bridges	6.1	41.3	62.3	−33
Highways	20.3	122.7	76.8	+60
Earthworks, Waterways	6.0	48.8	61.9	−21
Buildings,				
Public	39.3	401.0	238.1	+68
Industrial	31.5	143.8	164.2	−12
Commercial	132.8	641.7	384.4	+62
Unclassified	13.6	117.3	91.3	+28

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 1950 (8 wks.)	Cumulative 1949 (8 wks.)	% chge
NON-FEDERAL	$725.4	$764.4	−5
Corporate Securities	335.4	398.5	−16
State and Municipal	390.0	365.9	+7
Total Capital	$725.4	$764.4	−5



MAZE OF CROSSOVERS and switches lies between bridge and Jamaica, N. Y. station. If construction delays one train during rush hours, all subsequent trains are delayed.

Complex Bridge Lengthened Under 1,635 Daily Trains

Alfred C. Maevis
Arthur A. Johnson Corp., New York, N. Y.

LENGTHENING and rebuilding a 13-track double-deck bridge, without disrupting schedules for 1,635 trains daily, is a job that has kept Arthur A. Johnson Corp. and Mason & Hanger Co. busy for more than a year.

The project's purpose is to provide a ten-lane vehicular underpass where four lanes passed previously. The structure will separate a New York City expressway (Van Wyck) and the Long Island Railroad, near the Jamaica passenger station. Jamaica is a principal junction of the road.

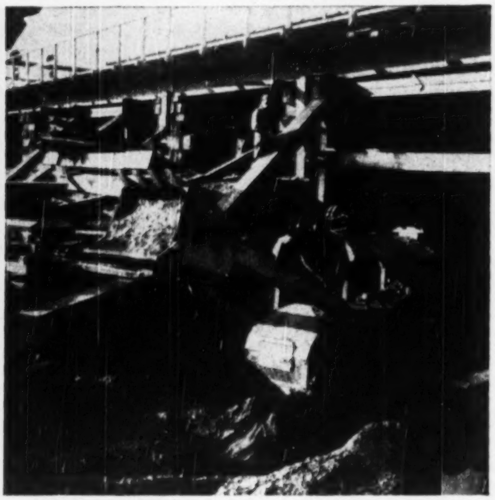
With rush hour commuter train service to and from New York City planned for train movements averaging one every 45 seconds during the morning and early evening hours, and with the not uncommon case of having four or more trains on the bridge at once, full cooperation and coordination between the railroad's operating division and the contractor was the order of the day.

The most important result of cooperation was a construction schedule that required only one track to be out of service at a time.

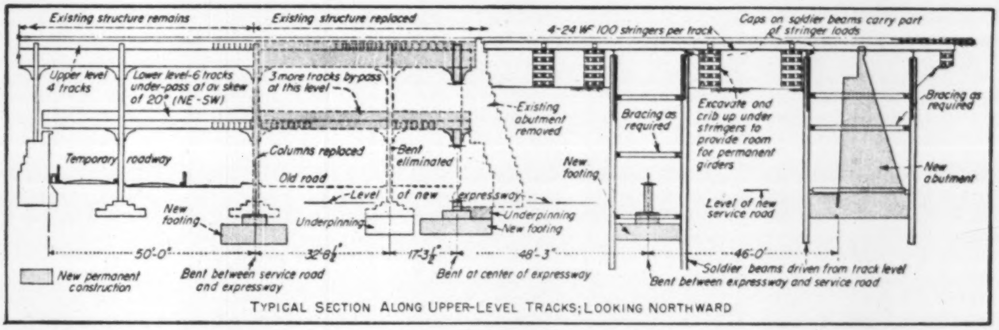
Briefly, the job involves widening Van Wyck Boulevard from 100 ft to 194 ft 3 in., and lowering its grade. This has necessitated constructing a new abutment and wing walls, erecting two additional cross bents and lowering the footings of another bent, which has been rebuilt because of an increase in the span of the girders.

The procedure on which the design was based was to complete all of the substructure before beginning erection of the permanent steel.

ABUTMENT TRENCH was excavated inside rows of soldier beams driven from track levels. Timber lagging was inserted behind beam flanges. Braced wales were installed as needed.



OVERHEAD LOADER was a handy tool for foundation-trench excavation when width permitted. Initial headroom was not required because loader could work into a face from the outside.


Existing structure remains
Existing structure replaced
4-24 WF 100 stringers per track
Caps on soldier beams carry part of stringer loads
Upper level 4 tracks
Lower level-6 tracks under-pass at av skew of 20° (NE-SW)
3 more tracks by-pass at this level
Existing abutment removed
Bracing as required
Excavate and crib up under stringers to provide room for permanent girders
Bracing as required
Temporary roadway
Columns replaced
Bent eliminated
New footing
New abutment
Old road
Level of new expressway
Level of new service road
New footing
Underpinning
Underpinning
New footing
50'-0"
32'-8½"
17'-3½"
48'-3"
46'-0"
Soldier beams driven from track level
New permanent construction
Bent between service road and expressway
Bent at center of expressway
Bent between expressway and service road
TYPICAL SECTION ALONG UPPER-LEVEL TRACKS; LOOKING NORTHWARD

CONSTRUCTION SCHEME—Where original four-lane street passed under two track levels, half of structure left intact, half revised to make room for three expressway lanes. Where new structure replaced embankment (right), low-headroom excavation was done by hand; earth was buggied to point where crane could hand material to trucks.

As the first step in construction, the tracks were temporarily removed from service, one by one. Track, ties and 2 ft of roadbed were removed. Then foot blocks and stringers were set, rail and ties were replaced and the track was restored to service. This work usually was performed on Sunday when train movements were at a minimum. Following this, the foot blocks were replaced by cribs carried sufficiently deep to make room for the permanent deck girders at a later date.

• Soldier beams driven—Soldier beams were then driven along the trench lines of the new east abutment and of the footing for the line of columns behind the old abutment. Where possible, a crawler crane drove these soldiers to their proper depth; in other locations a locomotive crane drove the soldiers when train movements on the adjoining tracks permitted. Where neither method could be used, sheeted pits were dug full depth, soldier beams were set in place and concrete footings were poured around the beams' lower ends.

To reduce the span of the temporary stringers supporting the track, caps were set on top of the soldiers which then acted as bearing piles to carry train loads.

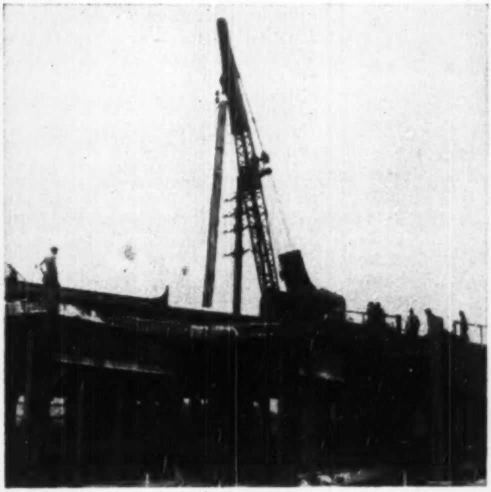
With the soldiers in place, the trenches for the wall and for the column footing were drifted under the track.

After completion of trench excavation, the new footings were poured and the abutment wall was carried up to the underside of the temporary-track stringers. Perforated-type drains were placed, and bagged gravel was stacked for the height of the wall, to backfill the space behind the new abutment.

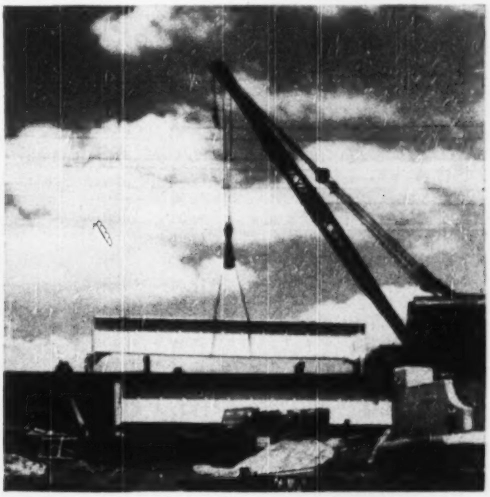
In the area of the old roadway where the expressway was to be lowered, two lines of columns were underpinned.

All of the foundation work was done in advance of any work on the reconstruction of the existing steel structure. By doing as much work as possible in advance, it was decided that the interference with train operation would be considerably less than if some items were left until steel erection had been started.

• Steel erection—Steel erection began on the upper level with the replace-



FULL-LENGTH COLUMN (40 ft) inserted through holes in old structure's upper and lower decks. Old girders shored by timbers during column change.



FIRST GIRDERS go into place between previously-set columns, for southerly upper-level track. Locomotive cranes did most of column and girder setting.

ment of columns at the old centerline of roadway. Temporary shoring supported the existing girders while the old steel was cut out and the new set. By eliminating cross-bearing of timber and using steel wedges, unit stresses of more than 1000 psi were used in the timber.

Then, starting with the southerly track, train traffic was rerouted to adjoining tracks while the track was removed, together with its two lines of supporting girders and the deck slab. The deck for the adjoining track was temporarily supported on a 14-in. steel cap atop 8x12-in. posts. Because of the presence of lower-level tracks, this was the maximum size posting that could be used and still leave a safe but close clearance for lower-level trains.

The new steel was erected and riveted. A deck slab of high early strength concrete was poured to permit the slab to carry loads within three days. Fabric waterproofing then was laid and protected by asphalt planks, after which the track was replaced, signals and third rail restored, and the track put back into operation.

Subsequent tracks were completed in the same manner except that it was necessary to remove but one line of girders for each of those which followed. Lower level steel erection followed the same general procedure. There was a saving in time, however, because the full-length columns that supported both upper and lower level girders had been set as part of the upper deck steel. It was also possible to set several lower-level girders in advance of taking a track out of service.

The time allowed for each track move was 30 days and while it was exceeded in some cases, the average actual time used was 3½ weeks, including all lost time.

Vehicular traffic was maintained in Van Wyck Boulevard throughout by crowding two traffic lanes into what originally was a sidewalk area and part of the main roadway. This area was clear of the working area.

The work is being performed by the Arthur A. Johnson Corp. and Mason & Hanger Co., Inc. as joint venturers. For the contractor the work is under the direction of Charles B. Molineaux, general manager, Alfred C. Maevis, project manager, and Joseph Zanini, field superintendent. The contract for the work amounts to $2,529,400 and is under the supervision of the New York State Department of Public Works and the Long Island Railroad. Paul Hale is resident engineer for the state and E. L. Kirkhuff is supervising section engineer for the railroad.

Find Water Rates Vary Widely

Chicago and San Francisco are at opposite ends of the annual-bill scale for similar volumes of water measured by a ⅝-in. meter. This fact was uncovered in a recent survey of metered-water-rates in fourteen of the largest U. S. cities made by the Philadelphia Bureau of Municipal Research. Difference in supply source, raw-water quality and distribution methods are reflected in the water charges in effect at various cities.

No two of the cities surveyed have identical metered-rate structures. Several bill on a yearly minimum charge varying with meter size plus a flat rate for all water consumed over the minimum allowance. New York and Chicago have a flat rate for all water used, regardless of meter size or volume of water consumed.

Some cities have a sliding scale. Their rates decrease as volume of consumption increases. Most municipalities supplement metered rate with a minimum or service charge, graduated to meter size.

Five cities—Philadelphia, Buffalo, Cleveland, Baltimore and Los Angeles —have a minimum charge computed on an annual, quarterly or monthly basis. Detroit, San Francisco, Pittsburgh, and Milwaukee utilize service charges.

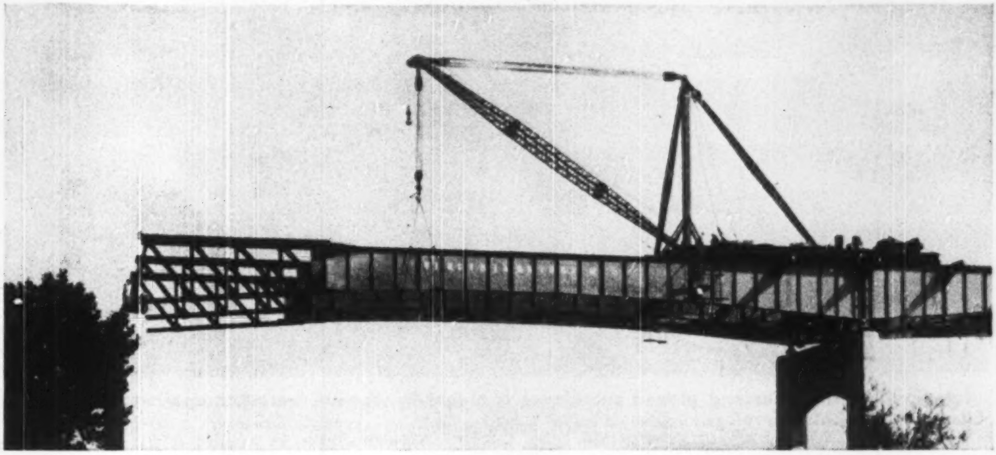
St. Louis utilizes a special sliding rate for benefit of industries consuming more than 60,000 cu ft of water in six months.

Annual bills in fourteen cities for similar volumes of water delivered through a ⅝-in. meter are shown in the accompanying table. Where billing is oftener than yearly, it is assumed that volumes are equal for each billing period, and total of bills is equivalent to annual volume. For simplicity, a ratio of 7.5 gal to one cubic foot is used instead of 7.48.

REPRESENTATIVE WATER BILLS

	30,000 Gal. (4,000 Cu. Ft.)			**45,000 Gal. (6,000 Cu. Ft.)**		
	City		**Bill**	**City**		**Bill**
1.	San Francisco	a.	$18.54	San Francisco	a.	$23.08
2.	Buffalo	b.	13.20	Buffalo	b.	13.20
2.	Los Angeles	b.	13.20	Los Angeles	b.	13.20
4.	Washington	b.	10.94	Baltimore		12.00
5.	Baltimore	b.	8.00	Pittsburgh	a, e.	11.00
5.	Boston	b.	8.00	Washington	b.	10.94
5.	Philadelphia	b.	8.00	Boston		9.00
5.	Pittsburgh	a, e.	8.00	New York		9.00
9.	Detroit	a.	6.56	St. Louis		9.00
10.	New York		6.00	Philadelphia		8.90
10.	St. Louis		6.00	Detroit	a.	8.40
12.	Cleveland		5.75	Cleveland		7.25
13.	Milwaukee	a.	5.70	Milwaukee	a.	7.05
14.	Chicago	d.	2.40	Chicago	d.	3.60
	60,000 Gal. (8,000 Cu. Ft.)			**112,500 Gal. (15,000 Cu. Ft.)**		
1.	San Francisco	a.	$27.62	San Francisco	a.	$43.51
2.	Baltimore		16.00	Baltimore		30.00
3.	Pittsburgh	a, e.	14.00	Pittsburgh	a, e.	24.50
4.	Buffalo	b.	13.20	Boston		22.50
4.	Los Angeles	b	13.20	New York		22.50
6.	Boston		12.00	Los Angeles		22.20
6.	New York		12.00	St. Louis		21.30
8.	St. Louis		11.80	Washington		17.69
9.	Washington		11.39	Detroit	a.	16.68
10.	Detroit	a.	10.24	Buffalo		16.50
11.	Philadelphia		9.80	Cleveland		14.00
12.	Cleveland		8.75	Milwaukee	a.	13.13
13.	Milwaukee	a.	8.40	Philadelphia		12.95
14.	Chicago	d.	4.80	Chicago	d.	9.00

(a) Includes service charge. (b) Minimum charge. (c) Minimum use of 60,000 cu. ft. during a 6-month period. (d) Less 8 percent discount if paid within 10 days. (e) Less 2 percent discount if paid within 10 days.



Temporary trusses aid erection of continuous girder spans—

Expensive Falsework Bents Not Needed

E. C. Jacob
Manager of Erection
Virginia Bridge Co.
Roanoke, Va.

CONTINUOUS girder highway bridges with spans of 160 ft. and more are becoming increasingly popular with designers. And Virginia Bridge Company has a method of erecting them that is economical and fast. It utilizes temporary trusses to extend the length of the outer girder sections so that they can be erected without falsework.

A typical example is afforded by the bridge over French Broad River at Asheville, N. C., where three lines of continuous girders 1,080 ft. long, consisting of five 160-ft. spans and two 140-ft. end spans, cross 100 ft. above the boulder strewn river bottom.

On this bridge—as on so many of its type—field splices are located so that the length of girder over the piers is about 45 percent of the span, leaving the other 55 percent to be filled in by the center section of the girders.

Girder sections over the piers are 75 ft. long and weigh 21 tons each. Center sections are 80 ft. long and weigh 20 tons. The extension trusses bolt in pairs to the center section and are arranged so that girders over the piers can be threaded between the trusses and connected. Field splices are located 37 ft. 6 in. from the piers.

In the erection operation, a 50-ton stiffleg derrick traveler with 85-ft. boom was assembled on the bridge's concrete approach span. This traveler was assisted by a 20-ton crawler crane working on the ground in erecting the 140-ft. end span. Beyond that first steel span the stiffleg derrick worked alone, taking girder sections from a push car that followed it from span to span with materials.

When girder sections were erected over the near pier on each span, the traveler moved out to within 2½ ft. of their ends (where they were to be spliced to center sections.) Then, taking center sections—with trusses attached—from the push car, the derrick held them with their truss-ends resting on the far pier while the field splice was made.

TRAVELER DERRICK threads a pier section of one of the three girders into position, between trusses temporarily supporting the near girder.

With this splice completed on each of the three girders, the traveler moved forward to place girders over the next pier. Truss-pairs bolted to mid-span girders were designed so that pier girders could be properly seated and spliced without any jacking. Floorbeams and bracing were placed by the traveling derrick as the work progressed.

Rails mounted on the trusses attached to the outside girders match shoes on the traveler. Thus the traveler could move all the way out to the end of the truss to be in best position for placing pier girders. Then, backing off, the traveler removed the temporary trusses and transferred them to the yard for reuse in the next span.

These trusses have been designed for reuse also on other jobs. Careful consideration of influence-line diagrams for several continuous girder bridges—to be built possibly in the future—went into the design of the erection trusses.

Because of the length of steelwork (1,080 ft.) on this French Broad River bridge, special care was taken in fabrication. When the last sections were erected, it was found that overall lengths of the three girders were within ¼ in. of one another and of the center-to-center distance between piers 1 and 8.

The bridge was designed by the North Carolina State Highway Department. Steel superstructure was fabricated and erected by Virginia Bridge Co. under a subcontract from Bowers Construction Co., general contractor.

Safety from earthquakes and ground subsidence is sought in separate water storage tanks as the city of Long Beach, Calif. develops . . .

Steel Tank Farm as City Reservoir

TWELVE FLAT-BOTTOMED, steel tanks now under construction will provide 40 mg. of new storage for the Long Beach, Calif., water system.

Earthquake hazard and sinking ground first led Long Beach engineers to adopt such storage in 1932. Experience since then (including one major earthquake) has encouraged the expansion of this reservoir system with minor modifications based on use history.

Almost 20 years ago designs were under way for a reinforced concrete reservoir on Alamitos Hill (a portion of the Signal Hill oil-producing area). A resurvey of the site indicated ground settlement, attributed to the production of oil, but because the hill was the only elevation available the water storage had to be provided there. The solution was to change the plans to use six flat-bottomed steel tanks. There are now 12 tanks at Alamitos Hill, and room for 19 more.

By building six tanks the earthquake risk was spread over more structures. Further, should settlement continue (and there was every reason to believe that it would) the tanks could settle as independent structures.

• Tanks resist earthquake forces—This theory was demonstrated in practice during the Long Beach earthquake of 1933. These six tanks endured the shake with no damage. Tierods extending radially from a central column reinforced the upper rim of the tank, making it a rigid unit. One other flat-bottomed tank in the Los Angeles area, not reinforced by such tierods, failed in the big 1933 earthquake.

Accordingly, the number of tierods being installed on the tanks now under construction was doubled as an extra precaution. Twenty ⅞-in. rods with turnbuckles for tightening purposes are used in each of the new tanks.

The current work involves a completely new reservoir site on Dominguez Hill, just northwest of the city. With a capacity for a total of 28 tanks, this site was selected because it is the only elevated area available to serve the rapidly expanding residential and industrial area on the west side of the city.

Water supply for the city of Long Beach comes from local wells and from the Metropolitan Water District of Southern California. At present 54 percent of the total is well water. This amounts to 20 to 25 mgd. of well water to meet an average demand of 33 mgd. Peak demand in 1949 was 46 mgd.

The tanks on Dominguez Hill will be served entirely by Metropolitan Water District water coming from the Colorado River. The other reservoir area is more conveniently located to the well supply system and to the treatment plant now under construction by the city of Long Beach (ENR Apr. 29, 1948, vol. p. 656). Water supplied by the Metropolitan Water District is filtered and softened at the district's plant near LaVerne, Calif.

• Tanks hold 3½ mg.—The new tanks are 132 ft. in diameter and have a side wall depth of 35 ft. Each of them will hold about 3½ mg. They are built of steel plate in five courses with the bottom course being ⅞ in. thick and the top course ¼ in. thick.

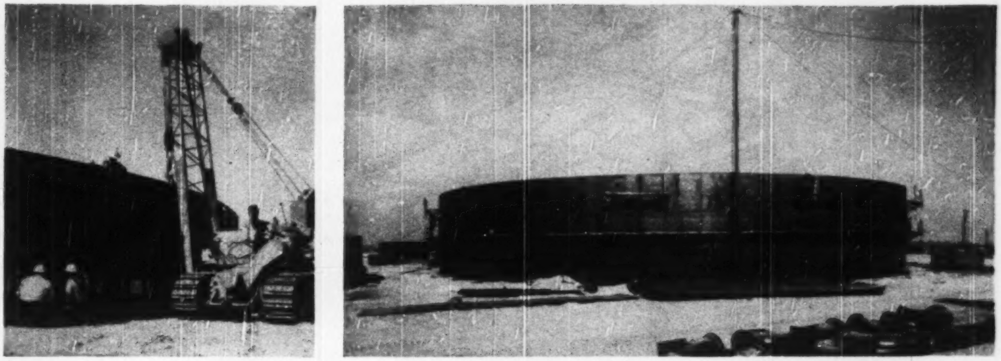
Each of the tanks is covered with a wooden roof structure built up on steel girders supported by concentric rings of pipe columns. Treated lumber is used for the roof system and an asphaltic-type roofing material is applied. The wooden roof system will, city officials hope, result in lower maintenance costs.

The Alamitos Hill installation is founded on a sandy formation. However, at Dominguez Hill a layer of clay overlies a more porous formation. To provide drainage, the city has installed a 1-ft. thick sand blanket at each tank site. Subgrade for this blanket is 1 ft. higher at the middle than it is around the edges.

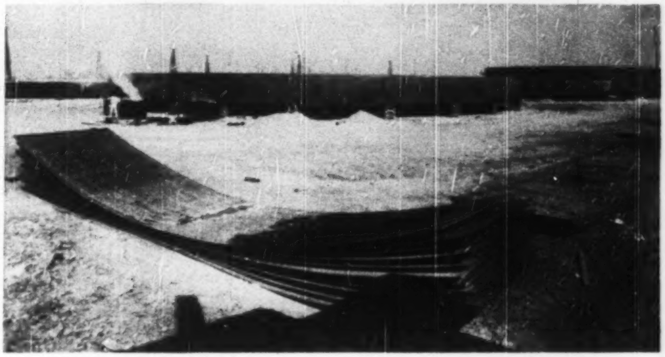
To insure drainage of any trapped water, drains 24 in. in diameter were drilled through the clay formation to the more porous formation and these drains were filled with sand. Twenty such drains were provided for each tank.

• Unusual bottom treatment—The city of Long Beach is requiring an unorthodox type of protection for the bottom of these new tanks—unorthodox as far as standard flat-bottom tank practice is concerned. Usually, flat-bottomed tanks are constructed on a sand blanket and oil is pumped under the tank for protective purposes. This oil can be renewed from time to time.

However, Long Beach city officials have successfully used a coal-tar



TRACTOR-MOUNTED CRANE sets initial pieces of the huge tanks in place on cribbing. Later (right) a single derrick is used to hoist the steel plate. Welders work from scaffolding supported by bolted brackets.



THE TANK BOTTOMS are jacked up on cribbing so coal tar enamel can be applied for corrosion resistance.

enamel coating on their previous tank installations and have specified it again in this case because of their earlier success. The early tanks were of riveted construction and thus they had to be erected on cribbing. The bottoms were coated with the coal-tar while the tanks were installed on this cribbing.

The new tanks are of all-welded construction. The city is paying extra to have the tanks jacked up on cribbing and the coal-tar enamel installed. Justification for this is the excellent experience with the earlier tanks. Exploration under some of these old tanks recently disclosed that the bottom tar coating is still intact.

Procedure is to coat the bottom with the coal-tar enamel and then remove the cribbing in the center portion of the tank. The sand blanket is smoothed to exact shape and the sand impregnated with 1½-gal. of oil per sq. yd. Another ring of cribbing is then removed, the sand smoothed and more oil applied. Thus, the tank is gradually lowered onto the prepared sand blanket.

• **Construction sequence**—In constructing the tank, the bottom is welded up first and the first ring of the shell welded onto it. This provides a tub that is jacked up on cribbing for water testing and bottom coating. After this tub is lowered to its permanent location, additional rings of steel plate are added. The vertical welds are made first with positioning accomplished by special devices developed by the contractor. After a ring is welded up, it is carefully positioned and the girth welds are made.

Lugs welded to the plates hold brackets that support scaffolding for the welders to work from. The vertical member of the triangular bracket is slipped through the lugs and the other two members bolted to it. This scaffold system is worked up the side of the tank as construction progresses.

After the steel shell is completely constructed, it is coated on the inside with a coal-tar enamel. Then work on the roof system begins. Steel members of the roof system as well as the tie-rods are coated with coal tar. Final step in the construction sequence is painting the outside of the tank. A prime coat of red lead and two coats of aluminum paint are used in the painting.

The twelve water storage tanks comprising this reservoir system are named the J. Will Johnson reservoir in honor of a long-time member of the Long Beach, Calif., Board of Water Commissioners. Work is under the direction of Brennan S. Thomas, in his capacity as general manager and chief engineer of the Long Beach Water Department.

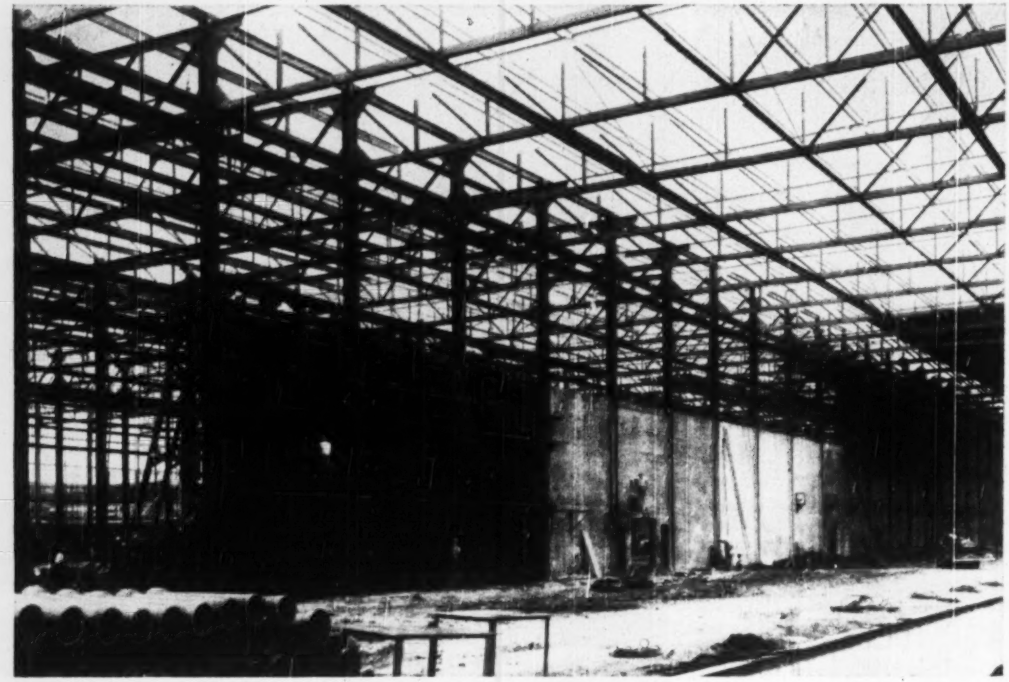
The tank builder, under a $1,134,000 contract, is the Chicago Bridge & Iron Co. This contract includes only the tanks—foundation preparation and piping are separate contracts.

Transit Line Riders Decline

Fewer people are riding city transit lines, according to the International City Managers' Association.

Statistics compiled by the American Transit Association show that last year's passenger traffic on the nation's streetcars, trolley coaches, buses and subways was off 11 percent from 1948. Fare increases were in large part responsible for the drop in passenger traffic, the Association observed. An estimated 19 billion people were carried on urban transit systems in 1949.

Despite decline in riders operating income of transit companies totaled $1.4 billion in 1949—a fraction of one percent above that of 1948. This increase was due to fare increases effected on most lines.



Form panels that traveled on monorails helped contractor achieve . . .

Rapid Placement of High, Thin Walls

"Labor cost was 15c per sq. ft. of forms."

Jack Wegweiser
Sales Engineer
Irvington Form and Tank Corp.
New York, N. Y.

WHEN A CONTRACTOR must build a half mile of thin double-reinforced concrete wall, 50 ft. high he's in a tough construction situation. There are unusual problems in form design, form ties, erection, pouring, vibration and stripping—particularly if the time schedule is tight.

The H. Platt Co., Erie, Pennsylvania was faced with this challenge to construction ingenuity on a contract to build a warehouse for the General Electric Co. at Erie, Pa. This building is a steel frame structure 1,000 ft. long and 340 ft. wide, containing three concrete firewalls, (the longest 1,000 ft.) 8 in. thick and 50 ft. high, with two reinforcing-rod mats. These walls are set in between columns spaced at 20-ft. centers.

• Form design considerations—To set up a rapid, day-to-day pouring schedule, the first consideration was the selection of the forming system. The major objectives involved in this selection were:

a. Panel width to span the distance between structural steel columns (20 ft.)

b. Panel height for pouring at least the lower half of the wall (upper) half to be poured in two smaller stages.

c. Panels rigid enough to permit 50 re-uses without delays for adjustment or repairs.

d. Elimination of sanding or wire-brushing form surfaces between uses.

e. Form strength sufficient to withstand concrete pressures developed under rapid pouring conditions.

f. Light weight in the form panel to permit erection and stripping without costly heavy-weight crane equipment.

g. Form adaptability to permit use for other structures.

After a thorough research into various methods of forming that would satisfy the above requirements, the Platt Co. decided on large panels, field-assembled from 8-in. wide, 14-gage steel-channel form sections, similar to those used on the jobs described in ENR Nov. 3, p. 32, Oct. 27, p. 45 and Nov. 17, p. 32. The unit sections were assembled with machine bolts instead of the normally used slotted bolts and wedges. Wood walers were paired 2 x 4's, vertically spaced from 2 ft. 4 in. to 2 ft. 8 in., with 4 x 6-in. strongbacks on the back, at third points. Walers and strongbacks were fastened to the forms with carriage bolts, the heads of which were flat against the form face.

This design resulted in a form panel that in use satisfied all the requirements set forth above.

• Monorails assist form erection—By a fortunate circumstance, it was possible

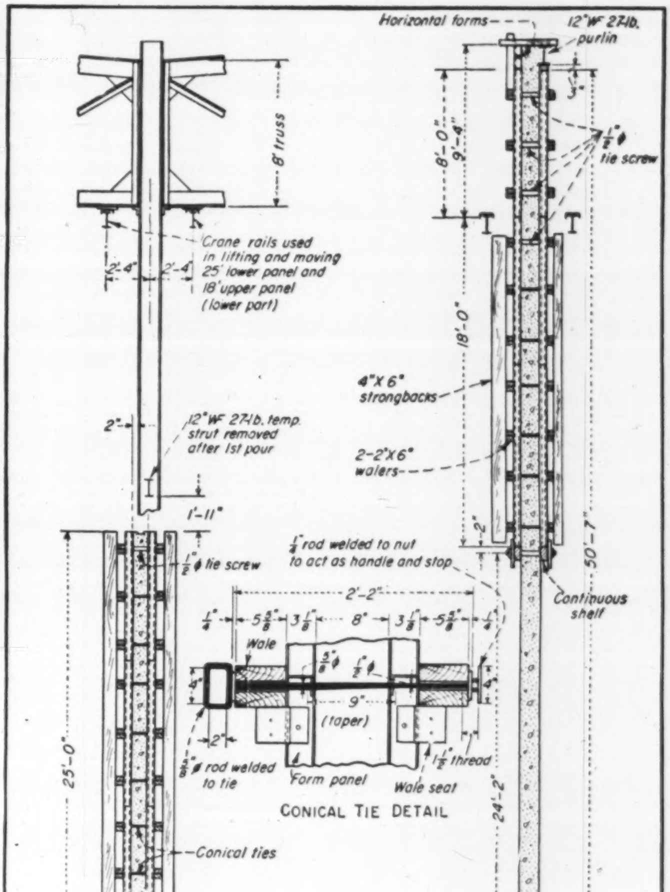
PUSH-THROUGH TIES—Accurate form-hole alignment aids the placement.

to eliminate the use of heavy crawler cranes normally required to handle 20 x 25-ft. panels. This elimination was possible through use of overhead crane rails that are a permanent part of the finished structure. Trolley-and-chain hoists moved the form panels from point to point. This worked out not only for the lower 25 ft.-high form, but for the next 18 ft.-high form.

For the highest remaining pour (9 ft. 4 in.) a simple arrangement using a portable A-frame set on the roof handled the forms.

• **Form ties line up easily**—In using large-area, re-usable form panels face-to-face, the contractor is constantly plagued with the problem of how to line up form ties. The ties are set on the face of one form, previously erected, so that the ties will all go through the tie holes of the closing form when it is being set in position. On a thick wall a man inside the form usually helps the "threading." In this case, there was only 8-in. thickness, with two layers of reinforcing rods, so all tie insertion had to be done from the outside. Moreover it was desired to combine the functions of spreading and tying in one device.

To meet the problem outlined above, a special tie was designed to


Horizontal forms
12"WF 27-lb. purlin
8' truss
Crane rails used in lifting and moving 25' lower panel and 18' upper panel (lower part)
2'-4"
2'-4"
2"
12"WF 27-lb. temp. strut removed after 1st pour
1'-11"
$\frac{1}{2}$" ϕ tie screw
25'-0"
Conical ties
Continuous curb cast with wall beam or precast conc. blocks
1ST POUR
8'-0"
9'-4"
3"
$\frac{1}{2}$" ϕ tie screw
18'-0"
4"X 6" strongbacks
2-2"X6" walers
2"
$\frac{1}{4}$" rod welded to nut to act as handle and stop
Continuous shelf
50'-7"
24'-2"
2ND POUR
2'-2"
$\frac{1}{4}$"
5$\frac{5}{8}$"
3$\frac{1}{8}$"
8"
3$\frac{1}{8}$"
5$\frac{5}{8}$"
$\frac{1}{4}$"
Wale
$\frac{5}{8}$" ϕ
$\frac{1}{2}$" ϕ
4"
4"
9"
(taper)
2"
$\frac{5}{8}$" ϕ rod welded to tie
Form panel
Wale seat
1$\frac{1}{2}$" thread
CONICAL TIE DETAIL
Bolted to walers and removed in stripping of corner section
Bolted to walers permanently
Blocks bolted to walers
Tie hanger
Wood filler
2"
5$\frac{1}{8}$"
METHOD OF SUPPORTING FORMS AGAINST STEEL COLUMNS—PLAN

HIGH-WALL FORMS in cross-section. Upper inset shows special tapered tie; lower detail is plan of form connections at steel column.

be pushed through two faces already in place (see drawing). This tie consisted of a tapered rod with a handle at one end. Threads at the other end received a stop-nut. This stop-nut could be tightened only a certain amount, thereupon arriving at refusal. This insured forms against "bellying-in" due to energetic tightening of the stop-nuts.

Additional form spreading was provided for by concrete spacers at the bottom and conventional tie-screws at the tops of the 25 ft.- and 18-ft.-high panels. No other spreaders were needed.

The special ties were given a quick twist by hand just before forms were stripped and removed for immediate re-use. Since the ties re-used 50 times the low unit cost of having them specially made was fully justified, especially considering the ease of tie handling, low labor cost and complete re-usability.

• Concrete dropped 25 ft.–Since the walls were doubly reinforced and only 8 in. thick, 2500-lb. concrete with 7-in slump was used. A portable skip-hoist, accepting a continuous flow from ready-mix concrete trucks, discharged the concrete into buggies and from there directly into the tops of the forms, for a maximum fall of 25 ft. It was not practicable to use elephant trunks because of insufficient internal form clearance. Contrary to usual expectations, the resulting concrete showed no segregation and of course, no irregular lines due to pour interruptions that would have been necessary if intermediate pouring doors had been used.

Rate of concrete rise in the form was set at 6 ft. per hour and was maintained without special precautions.

• External vibration specified–Vibration was performed by wooden mauls applied outside the forms. No internal vibration was permitted, because accidental insertion of a vibrator head into initially-set concrete would stress ties dangerously. Form ties and rate of pour were designed to take advantage of the fact that concrete gets its initial set in from 30 min. to an hour; with a pouring rate of 6 ft. an hour, full 25-ft. pressure head would not develop at the bottom of the form unless the initial set was disturbed.

The use of wooden mauls externally at fresh concrete levels proved satisfactory, perfectly safe, and permitted the desired pouring rates.

Stripping was a simple reversal of the erection process. Since the forms could be reset immediately after stripping, a speedy operation resulted. No delays were involved, as wire-brushing the steel form surface between re-uses was not required. Oiling was a simple matter of swabbing with long-handled oil-soaked brooms.

• Daily pouring schedule–Stripping, erecting and pouring schedules for the concrete lifts give an idea of the job's speed. On the lower, 25-ft. pour, three pairs of 20-ft. wide by 25-ft. high panels were used to pour a section 60 ft. long in four hours, from 12:30 p.m. to 4:30 p.m. The next morning forms were stripped and re-erected between 8:00 a.m. and noon, so that the succeeding pour could begin at 12:30 again.

On the upper 25 ft. high section, four sets of panels were so used that a section 40 ft. long (two sets) was poured every day between 8:00 a.m. and noon. The forms for a section poured one day were stripped and re-erected during the next day, but two sets of forms made for continuous daily pouring. This upper section was a slower operation because of the separation of the form into an 18 ft. and a 9 ft. 4 in. portion. The 9 ft. 4 in. highest panel was handled by an A-frame hoist set on the roof steel and moved from bay to bay by crane. The lower 18 ft. panel was handled from the monorail.

The combined operations of making the lower and upper pours produced an average progress of 50 ft. of wall every day, the average daily concrete volume being 65 cubic yards. When all the low pours were completed, the lower panels were put to work on the upper sections (lapping lower sections 7 ft.) in order to speed completion. The versatility of the forming system made this change a simple operation.

• Form cost data–Twenty-five carpenters with one foreman and a few laborers handled the work. Labor cost was 15 cents per sq. ft. of forms, not including crane time for moving panels from one wall to another. A great deal of this cost was in the initial assembly of the form panels and in some experimentation preliminary to adopting a method of handling the upper forms.

In actual operation, while working on one line under the best conditions, costs were reduced to just under 10 cents per square foot, for erecting and stripping.

In spite of some delays due to weather, progress was such that the concrete wall was completed on time. The initial wall pour was made July 18, 1949 and the job was completed on October 20.

The total form surface on the fire walls is 257,000 square feet. The floor area of the building is 310,000 sq.ft.

A few exceptions from straight-line procedure were necessary. One bay was left open to permit free passage of cranes and concrete trucks within the building. Door openings within the concreted bays were made by placing forms within the large wall panels. This permitted uninterrupted progress in the use of the main wall panels. A smaller form was used to complete the door frame, which was 4 in. thicker than the main wall.

• Management–Consulting engineers for the General Electric Co., are McGeorge, Hargett and Associates of Cleveland, Ohio, who designed the structure. Frank D. Carey, resident engineer for the General Electric Realty Corp., was in charge of the work.

General contractor was H. Platt Co., of Erie, Pa. Its president, Horace Platt, and Harold A. Cook, vice-president collaborated with the writer in working out the forming system. Mr. Platt was most cooperative in furnishing the data without which this article would not be complete. The operation was supervised by James Kerr, general superintendent, who with superintendent T. V. Davis was responsible for the successful and on-time execution of the project by the contractor.

Synthetic Detergents Don't Hurt Sewage

Normal use of synthetic detergents will have little or no effect on sewage-disposal systems, British engineers were told recently.

In an article printed in the Jan. 20 issue of The Surveyor, London scientific journal, A. Lawrence Waddams, of Shell Chemicals Ltd., reported that laboratory tests have turned up little or no adverse effect on sedimentation, on sewage bacteria and on sludge digestion.

Mr. Waddams points out that normal sewage would contain only a very minute proportion of detergents as used in household use, and this amount is so small as to have no practical effect on the sewage itself. It has long been feared that large amounts of detergents might have the effect of cleaning out the sewage system—because of the detergent effect of suspending solids in the water—and thus dump the cleanings suddenly into sedimentation basins.

He commented that only very occasionally—as in the case of a large laundry—would a sufficient amount of detergent be deposited to cause such a result.

For the same reason—the normally very small amount present—the detergent apparently had no effect on biological activity in sewage.

Dike Cofferdams Save Three Months On Susquehanna Bridge Foundations

EARTH-DIKE COFFERDAMS proved to be time savers for the builders of piers for the Susquehanna River crossing of Pennsylvania Turnpike's eastward extension. The job consisted of 45 piers and two abutments on a total length of 4,526 ft. Twenty-nine water piers included seventeen on the west side of an island and twelve on the east side, mostly at 109-ft. spacing. Piers extended 17 ft. above normal low water, and water depths to rocky bottom at piers ranged from 3 to 8 ft.

With such uniform depths in which to build the piers, the contractor investigated and chose the simple cofferdam. Fill was easy to get—from another contractor's shovels in a road pit at the western abutment, and from his own shovels at a steel plant's blast-furnace waste pile close to the eastern end. Dike height would not have to be great—the contractor was willing to lose a few cheap cofferdam sections to occasional high waters that could be expected. And the cofferdam, sections, built in successive adjacent rectangles, could act as construction-access roads.

• Parallel dikes—Beginning at each bank, the contractor built a parallel pair of dikes 100 ft. apart, extending beyond the first pier position. He then built a diaphragm dike to inclose the area, unwatered and commenced pier construction. After that he continued to extend dikes and install diaphragms, to cofferdam successive construction areas. Most of these latter cofferdam sections inclosed two pier sites. Dikes around three piers next west of the island were made up of island excavation.

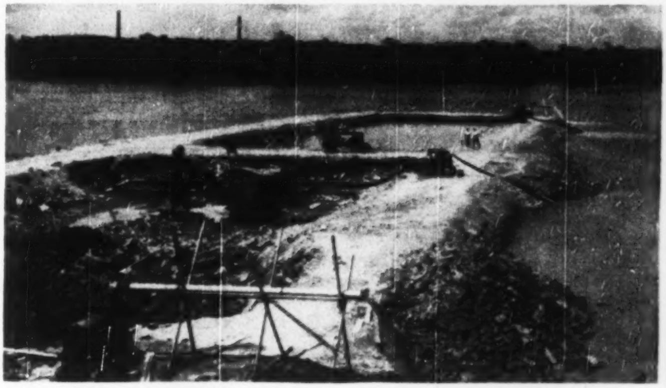
Dikes were built with 5-ft. freeboard, by rear-dumping materials directly onto the bottom from the ends of fill. Top width was sufficient for two vehicles, and side slopes were left at the material's natural repose. At one point, where a narrow waterflow gap occurred, the slope was riprapped.

One reason for breaking up the cofferdam into sections was to reduce the chance of losing the whole cofferdam if water rose. In addition, piers within one section could be completed and the section removed (except the side that served as an access road) while construction proceeded farther out. As sections approached the island, one access-road section on each side of the island was removed and replaced by a temporary bridge, under which river water was diverted. Material removed from dikes was transferred to new dikes.

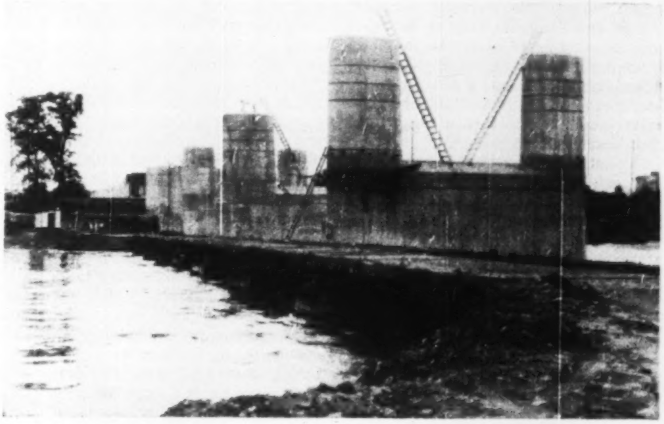
Within the cofferdam, footings 5 ft. deep were set 2½ ft. into good rock. This excavation varied from 2½ to 7 ft. in depth. Three pairs of full-height shaft forms were sufficient for the entire job of building above footings and pedestals. Concrete was bought from nearby suppliers on both sides of the river and passed into forms by crawler crane and bucket.

• Three months early—The construction scheme paid off handsomely, judging from the speed of work. The contractor began dike-building June 1, placed first concrete June 14 and completed the last shaft Sept. 30—three months ahead of time. In general, it was a two-shift job. The most important factor in job speed was the river's behavior. Not once in the four months of work did the river rise above normal low. Hence the contractor saved his full margin for cofferdam loss.

Booth and Flinn, Inc., Pittsburgh, was the contracting firm; Frank Transou, superintendent. District construction engineer for the Pennsylvania Turnpike Commission was George T. Chapman; resident engineer, P. J. Pettit. Parsons, Brinckerhoff, Hall and Macdonald engineered the bridge.



SIMPLE EARTH FILL enclosures extend toward island in shallow rock-bottom river, providing cheap protection and access for Pennsylvania Turnpike bridge pier construction.



SHORT BRIDGE crosses an abandoned cofferdam area to pass river flow after chain of dikes reaches opposite shore. Forty-five of the piers (above) will support four-lane roadway. (Pennsylvania Turnpike Commission photos)

Pavement Design Methods Defended

Canadian method of basing a determination of pavement thicknesses for airfields on in-place subgrade conditions rather than soaked subgrade conditions held to be conservative and more economical than methods used by the Corps of Engineers

Norman W. McLeod
Consultant, Department of Transport
Ottawa, Ont., Canada

METHODS FOR THE DESIGN of flexible pavements for airports, developed for the Department of Transport in Canada under the author's direction, were summarized in a series of four articles published in the issues of ENR for April 28, May 12, May 26 and June 9, 1949. Included were some comparisons with methods developed by the Corps of Engineers, U. S. Army. Comment on those articles, with particular reference to the comparisons just noted, prepared by Lt. Col. Peter C. Hyzer of the Corps of Engineers, was published in ENR Nov. 17, 1949, p. 40.

Col. Hyzer's remarks are welcomed, since they provide an opportunity for the further clarification of our own point of view on the various matters to which he has referred.

• **Comparison of curves**—Col. Hyzer states that the design curves used by the author for purposes of comparison were those developed by his organization during the war. We employed the latest curves available in published form when the articles were written. These appear in Part XII of the Corps of Engineers "Engineering Manual", which was issued in July, 1946. Any reduction in pavement thickness requirements that appears in the as yet unpublished revision of the Engineering Manual, to which Colonel Hyzer refers, will be a step in the right direction.

The manner in which the comparative data were presented in our Table 1 is referred to as misleading. That is not correct, since these data were assembled in the only form possible without taking up valuable space for needless explanation.

The Corps of Engineers' design curves are based upon wheel loads, not gross weight of aircraft. Traffic data for the Canadian airports in question are for aircraft for which the gross weights are known. Some organizations divide gross weight by two to obtain the wheel load, others assign a certain percentage of the gross weight to each of the two main wheels, with the balance to a third wheel. Consequently, by listing the data as shown, any organization can make the required wheel load comparison on the basis it normally employs.

• **California Bearing Ratio**—Col. Hyzer states that "The McLeod presentation of CBR data is particularly misleading" because "his comparisons are based on 'undisturbed' samples, although all conclusions are for field conditions." The colonel's position on that point appears to be out of harmony with Paragraph 2-10, Chapter 2, of the Corps' Manual, which states: "The CBR tests should either be made on undisturbed samples or on the sub-grade and base course soils in place." The implication of this quotation is that CBR values for undisturbed samples and for the in-place condition are equivalent.

The criticism is made that our "soaked tests are not described". They were made in accordance with the CBR procedures outlined in the Corp's Manual, which we assumed are very well known.

It is stated that the soaked CBR values for cohesive subgrades at 11 Canadian airports range from 2 to 4.6, and cannot therefore be broadly applied to all soils. It should be emphasized in this connection, however, that *the Corps of Engineers employed in-place CBR data* and *not* soaked CBR values *for the purpose of verifying their design curves.*

Fig. 25 in the author's articles indicates that the in-place CBR values at test locations at Canadian airports with subgrades of cohesive soils investigated so far have ranged from 2 to 20, the actual maximum being 25. Consequently, it is misleading for Col. Hyzer to imply that our test data, based upon these Canadian subgrade soils can be compared with Corps of Engineers' design requirements only over the very small CBR range of 2.0 to 4.6.

• **Subgrade strength**—The Department of Transport's use of the plate bearing test is criticized by Col. Hyzer, and he expresses surprise that they should be used, since "they were discarded long ago by the Corps of Engineers."

Plate bearing tests are employed for flexible pavement design, evaluation, and research by the U. S. Bureau of Public Roads, the Highway Research Board, and the Asphalt Institute in their current comprehensive cooperative investigation at Hybla Valley, also by the Bureau of Yards and Docks of the U. S. Navy, the British Air Ministry, Minnesota State Highway Department, Kentucky Department of Highways, Ontario Department of Highways and the Road Institute of Sweden.

Our justification for the use of the plate bearing test at 0.5-in. deflection for 10 repetitions of the load as a criterion for airfield runway design and evaluation for capacity operations is the fact that it seems to tie in very well with actual traffic data at Canadian airports. If further experience indicates that this criterion is either too conservative or too liberal, it will be modified.

It should be observed in this connection that recent papers by L. A. Palmer have indicated that the Bureau of Yards and Docks has also obtained excellent correlation between traffic data and plate bearing tests for a large number of airport runways in the U.S.A.

Finally, we would like to emphasize that the Department of Transport's method of design, while based originally upon the results of plate bearing tests, is not necessarily dependent upon plate bearing information for its application. Figs. 23, 24, 25, and 26, in the articles under discussion, indicate that subgrade plate bearing tests have been correlated with North Dakota cone bearing, field CBR, Housel penetrometer, and triaxial compression tests. More than one of these can be performed in the laboratory. Consequently, the Department of Transport's method of design is not limited to a single test, but can be applied on the basis of subgrade supporting values provided by any one or more of these five tests, as illustrated in Figs. 36 and 38.

Comparative thickness of pavements

Col. Hyzer includes in his Table II comparative data for the design requirements of the Canadian Department of Transport and the U. S. Corps of Engineers. It should be particularly noted that the data employed by Col. Hyzer are apparently for a specially constructed test section.

The manner in which the data of Col. Hyzer's Table II would be modified on the basis of actual subgrade test values obtained at a number of Canadian airports at which the paved runways had been subjected to several years of annual cycles of weather, is indicated in the accompanying Table A. This comparison is based upon average in-place and soaked CBR values for the subgrade at each airport. Corps of Engineers' thickness requirements are given in this table in terms of the soaked CBR ratings on which their design is based, and data for the Department of Transport's design are expressed in terms of the in-place CBR values with which it has been correlated.

It will be seen that the data in Table A, which are based upon subgrade conditions at several Canadian airports in actual service, lead to quite different conclusions than those presented by Col. Hyzer on the basis of his Table II.

Department of Transport runway thicknesses range from 60 to 80 percent, with an average of only 70 percent of the Corps of Engineers' requirements, rather than Col. Hyzer's average of 90 percent. The taxiway thickness requirements of the Department of Transport range from 67 to 82 percent, with an average of only 74 percent of the thicknesses required by the Corps of Engineers, in place of the average of 100 percent reported by Col. Hyzer.

We believe that the data of our table, based upon in-place and soaked CBR tests for subgrades under pavements that have been in service for a number of years, provide a much more valid basis for comparing the two methods of design, then Col. Hyzer's data, which apparently were obtained from a specially constructed test section. The latter may not represent either average subgrade construction in the field, or the conditions that would exist in a subgrade after the runway structure of which it is part had been exposed to a number of years of seasonal climatic change and traffic.

Tables similar to the one given here, prepared for wheel loads less than 150,000 lb., would show still greater differences between the Corps of Engineers' and Department of Transport's thickness requirements. To anyone who makes even a casual study of Fig. 34 in the original articles, we believe it is quite evident that the Department of Transport's runway thickness requirements would vary from about one-third or less to about four-fifths of those required by the Corps of Engineers' design. The design curves for wheel loads of 30,000 and 60,000 lb. provide typical examples.

It should be added also that from our own experience to date there is some evidence that the Department of Transport's design may still be too conservative, rather than otherwise.

- **Field Moisture**—Actual data obtained by the Department of Transport's investigation of the subgrades of runways in service, lead to quite the opposite of Col. Hyzer's claim that they justify the Corps of Engineers' procedure of basing design on the CBR values of soaked subgrade samples. CBR ratings for the subgrades at Canadian airports were determined for both in-place and soaked conditions. For cohesive subgrades tested to date, the moisture contents of the top inch of the soaked samples, (on which the Corps of Engineers' CBR test for design is made), varied from 25 percent to 140 percent higher than the actual moisture contents that had accumulated in the subgrades under paved runways after several years of service. This difference in subgrade moisture contents between in-place and soaked conditions, is responsible at least in part for the considerably greater thicknesses required by the Corps of Engineers' than by the Department of Transport's method of design, illustrated in the accompanying table and our Fig. 34.

Consequently, even after making full allowance for the 20 percent reduction in thickness permitted by the Corps of Engineers for certain conditions in arid regions, we see no justification for continuing to require that, regardless of the topography, drainage, climate, and geographical area in which they are located, runways must have the same thickness of flexible pavement to carry a given wheel load simply because their subgrade soils have the same CBR rating after being immersed in water for four days.

The requirement that flexible pavement design must always be based upon a saturated subgrade condition was very ably commented upon by Prof. J. Converse, California Institute of Technology, in his paper on "The Practical Use of Shear Test Data", presented at the 1939 annual meeting of the American Road Builders' Association. Prof. Converse's remarks are of particular interest because they were made a year or two before the Corps of Engineers adopted the CBR test on soaked subgrade samples as its basis for design.

Prof. Converse stated: "It has been sometimes asserted that in order to be on the safe side, the shear test should be made on saturated material. If a saturated condition is to be expected in the field, such a procedure is proper, but as a *general practice it may frequently result in absurdly low values, indicating unstable conditions where actually no such condition will occur.* If the subgrade can become completely saturated by rising ground water and lack of drainage, the saturated sample should of course be used in the test, but *in a well drained*

TABLE A—COMPARATIVE THICKNESSES OF FLEXIBLE PAVEMENTS BUILT TO DESIGN REQUIREMENTS OF THE DEPARTMENT OF TRANSPORT AND THE CORPS OF ENGINEER

(Based on in-place and soaked CBR ratings for the subgrades of several Canadian airports. Wheel load, 150,000 lb., single tire.)

Airport	Average In-Place CBR	Average Soaked CBR	Design Thicknesses (inches) Runways DOT*	Runways CE**	Taxiways Dot	Taxiways CE
Lethbridge	12.6	4.6	35	58	42	63
Regina	7.3	3.3	46	70	53	75
Malton	6.6	3.5	48	69	54	74
Saskatoon	5.3	3.6	52	68	58	73
Dorval	3.9	3.1	58	73	64	78

* Department of Transport.
** Corps of Engineers.

subgrade, a degree of moisture *less than saturation will usually represent the maximum moisture content.*" (The italics have been added.)

By substituting "soaked" for "saturated" condition to comply precisely with the Corps of Engineers' definition of the latter term, and "CBR" for "shear" test, Prof. Converse's remarks of ten years ago apply with equal force to the Corps of Engineers' present requirement that flexible pavement design must be based upon soaked subgrade samples.

- **Empirical support**—Col. Hyzer is critical of the fact that load test data for failed and unfailed areas were not obtained, and because our taxiway design is based upon a yield point deflection of 0.35 in.

It has been pointed out in the discussion in Highway Research Board Report No. 4B-1948 Supplement "Airport Runway Evaluation in Canada, Part 2", that at the time when the tests reported in this series of articles were carried out there were practically no failed areas at any of the airports tested. Consequently, we were unable to obtain data for both failed and unfailed areas. In the very few locations where this has been possible since, the wheel loads causing failure were in excess of those indicated to be safe by our load test design and evaluation criteria.

Unlike many airports in the U.S.A., taxiways at Canadian airports are normally very limited in extent. The runways not required at any given time for the take-offs and landings, are used quite generally as taxiways. Consequently, our testing program has been confined almost entirely to runways. Experience has shown that a greater thickness is required for taxiways, aprons and the turnaround areas at the ends of runways, than for the runways themselves. This added thickness can be very logically obtained by basing taxiway, apron and turnaround design on a smaller critical deflection than the 0.5-in. deflection employed for runway design.

Since the average yield point deflection for all plate bearing tests on flexible pavements tested so far was found to occur at 0.35 in., this value has been arbitrarily assumed as the critical deflection for the design of taxiways, aprons and turnarounds. We did not shift from a deflection of 0.225 in. for subgrades to a yield-point deflection of 0.35 in. for the pavement when arriving at the criterion for taxiway, apron, and turnaround design, as Col. Hyzer claims.

The reason for selecting 0.35-in. deflection for this purpose is clearly outlined on pages 22 and 23 of the Highway Research Board publication just referred to. If additional experience indicates that this critical deflection of 0.35 in. is either too large or too small for taxiway, apron, and turnaround design, it will be modified accordingly.

Col. Hyzer refers to the large volume of test data on runway evaluation and design obtained by the Corps of Engineers, which he seems to assume, from the general tone of his comments, is sufficiently extensive to place the Corps of Engineers' method of flexible pavement design above criticism by any other organization having a smaller amount of data.

It is quite true that the number of airports for which Canada's Department of Transport has been able to obtain comprehensive test data so far is not large. Nevertheless, the airports already tested cover a very wide geographical area, and have provided data concerning the bearing capacity of the subgrades on which they are built. Many other airports have been constructed on similar subgrades. The comprehensive test data for a limited number of airports, plus the observed performance of the runways at several hundred airports built during the past ten or twelve years, has led Canadian engineers to the conclusion that the Corps of Engineers' design is unnecessarily conservative, and would lead to expenditures for runway construction in Canada that could not be justified.

Furthermore, the Bureau of Yards and Docks of the U.S. Navy has evaluated 58 airports within the continental area of the United States. During the past three years, Mr. Palmer has published several technical papers on its findings. The principal conclusions of the Bureau of Yards and Docks' testing program are remarkably similar to those indicated by the Canadian Department of Transport's investigation. On page 71, ENGINEERING NEWS-RECORD, Nov. 11, 1948, the following sentences appear in a concise statement of the U.S. Navy's findings: "The bureau's evaluation program showed wartime flexible pavements of moderate thickness, ranging generally from 6 to 12 in., with a few of greater thickness up to 16 in., to be capable of taking individual wheel loads from 5,000 to 60,000 lb. without visible distress. By conventional design standards, these pavements would have to be from 15 to 45 in. thick."

Conclusions from study

When the design requirements of two organizations differ widely, as happens in this case, it may be worthwhile to carefully outline the specific areas of disagreement, either to facilitate a reduction in the existing major differences, or to understand more clearly why the two methods cannot be reconciled. In concluding this reply therefore, the author's understanding of the extent of these principal differences as touched upon in his series of articles and Col. Hyzer's discussion, is outlined below.

Much of the current wide divergence in flexible pavement thickness requirements between the Department of Transport's and Corps of Engineers' methods of design is due to the fact that the former is based upon in-place and the latter upon soaked subgrade conditions. It is unlikely that this wide difference can be narrowed until the approach adopted by either one or both of these two organizations is modified. It would seem reasonable that the criterion to be employed for any such modification, should be the overall cost and service performance of flexible pavements resulting from the application of each of these two methods of design.

To any suggestion that design be based upon in-place subgrade conditions, the Corps of Engineers will probably point out that for new airport sites, equilibrium in in-place CBR values for the subgrade may not be known until sometime after the pavement has been placed. This may at times be true, and the thickness requirements for these are likely to be a source of divergent opinion for some time to come.

Nevertheless, there are today large numbers of airports at which paved areas several years old already exist, but where lengthening, widening, and strengthening of existing runways is required, and new runways must be built. The in-place CBR values for the subgrades at these sites can be readily determined. The use of these in-place values for design, rather than the soaked CBR ratings prescribed by the Corps of Engineers' ENGINEERING MANUAL, would lead to considerable economies in construction.

In connection with runway evaluation, more liberal load supporting values would be obtained if runways that have been paved for several years were evaluated on the basis of in-place rather than soaked CBR subgrade values. Paragraph 2-10 Part XII ENGINEERING MANUAL fails to clearly indicate whether or not in-place CBR ratings can be employed for this purpose. If it is the intent of this paragraph that in-place CBR values are to be used, an unequivocal statement to this effect should be included. On the other hand, it would scarcely seem to be consistent to base design upon soaked CBR values, and evaluation upon in-place CBR ratings, since this could easily result in a runway being evaluated as safe for a wheel loading several times greater than that for which it was designed.

The present Corps of Engineers' design curves are based upon capacity operations. The number of airports that is subject to capacity operations in any country is a relatively small fraction of the total airfields. It would be very wasteful therefore to design every airport for capacity operations.

The latest edition of the ENGINEERING MANUAL (July 1946) contains no information concerning the reduction in thickness permissible for traffic densities that are only a fraction of capacity operations. The Corps of Engineers has obtained a vast amount of data on the relationship between pavement thickness, nature of subgrade, and number of coverages of different wheel loads at failure, in its accelerated traffic studies on specially constructed test sections. Whether or not outside engineers agree with the conclusions the Corps has presented with regard to the thickness requirements claimed to be indicated by these accelerated tests, the data obtained represent the best relative information in existence concerning the influence of pavement thickness and subgrade characteristics on the number of coverages of different wheel loads carried at failure.

A chart or charts showing the relationship between the number of coverages of different wheel loads versus the pavement thickness at which failure occurred on various subgrades, over the range from one coverage to the number representing capacity operations, would be of very considerable value when designing and evaluating runways for less than capacity operations.

The criticism will be made of course, that solutions to the three major points of difference just described, require further qualification. That may be true. Nevertheless, insofar as the portion of the flexible pavement design problem covered by the present discussions is concerned, it is around these three points that the principal differences between the Corps of Engineers' and the Department of Transport's requirements for thickness of flexible pavements have developed, and agreement or disagreement on these three points measures the extent by which the two design methods will generally approach each other or remain apart.

Notes on Legal Decisions

Summaries of decisions relating to construction prepared by I. Vernon Werbin, counselor at law and engineer, New York author of Legal Phrases of Construction Contracts (McGraw-Hill)

Installment payments

The New York Court of Appeals, in a recent case,[1] by a divided court held that even though a contract provides that certain installment payments will be made at certain specified times, it does not necessarily follow that the contractor is entitled to recover the installment payment at the time specified in the contract. Whether or not the contractor is entitled to the specified payment will depend upon whether the contract is entire or severable.

The contract involved was one to remodel a house. The contract provided as follows.

"All above material and labor to erect and install same to be supplied for $3,075 to be paid as follows:

$150 on signing of contract;

$1,000 upon delivery of materials and starting work;

$1,500 on completion of rough carpentry and rough plumbing;

$425 upon the job being completed."

The work was commenced and partially done and the first two stipulated payments made. When the rough carpentry and rough plumbing were completed, the contractor demanded the payment of the third installment which the owner refused to make, whereupon the contractor stopped work and brought the action to recover the same. The court held that the contract was entire, with one consideration for doing the whole work, so that on the owner's default in making an installment payment, the contactor could not collect the payment allegedly due but was entitled to recover in quantum meruit (measure of value recoverable for work done) or the contract price, less installments made, less the cost of completing the work.

The court in its opinion stated: "The whole question is as to the meaning of so much of the agreement as we have quoted above. Did that language make it an entire contract, with one consideration for doing the whole work, and payment on account of fixed points in the progress of the job, or was the bargain a severable or divisible one in the sense that of the total consideration $1,500 was to be the full and fixed payment for 'delivery of material and starting of work' . . . We hold that the total price of $3,075 was the single consideration for the whole of the work, and that the separately listed payments were not allocated absolutely to certain parts of the undertaking, but were scheduled part payments mutually convenient to the builder and owner. . . . To illustrate: It is hardly conceivable that the amount of $150 payable 'on signing of contract' was a reward to the plaintiff for the act of affixing its corporate name and seal. . . .

"We would, in short, be writing a new contract for these people if we broke this single promise up into separate deals, and the new contract so written by us might be, for all we know, most unjust to one or the other party."

(1) New Era Homes v. Forster et al., 299 N.Y. 303, 86 N.E. 2d 757 (New York Court of Appeals, June 3, 1949).

Right to Reject Bid

Where the invitation to bidders provides that the party asking for the bids reserves the right to reject any or all bids and to accept the lowest and best bid, the failure to accept the low bid does not constitute a breach of contract.

Under the above conditions the right to reject bids is unconditional and the party is entitled to exercise that right for any cause it may deem satisfactory, or even without any assignable cause. Under the above circumstances the invitation to submit a proposal is merely an invitation to open negotiations for a contract.[1]

There are comparatively few cases which affirm the right of the lowest bidder to ask a court to direct award of the contract to him.[2]

(1) Anderson et al. v. Board etc. of Public Schools, 122 Mo. 610, 27 S.W. 610.

(2) 26 L.R.A. 707 and numerous cases there cited.

Reference in Written Agreements

The rule is well established that "in the case of subcontracts, as in other cases of express agreements in writing, a reference by the contracting parties to an extraneous writing for a particular purpose makes it a part of their agreement only for the purpose specified".[1]

(1) General contracting Corporation v. United States, 70 F. 2nd 83, 85, cited with approval in Sanks v. Wilson, 86 F. Supp. 789, 795, (U. S. District Court of West Virginia, Oct. 17, 1949.)

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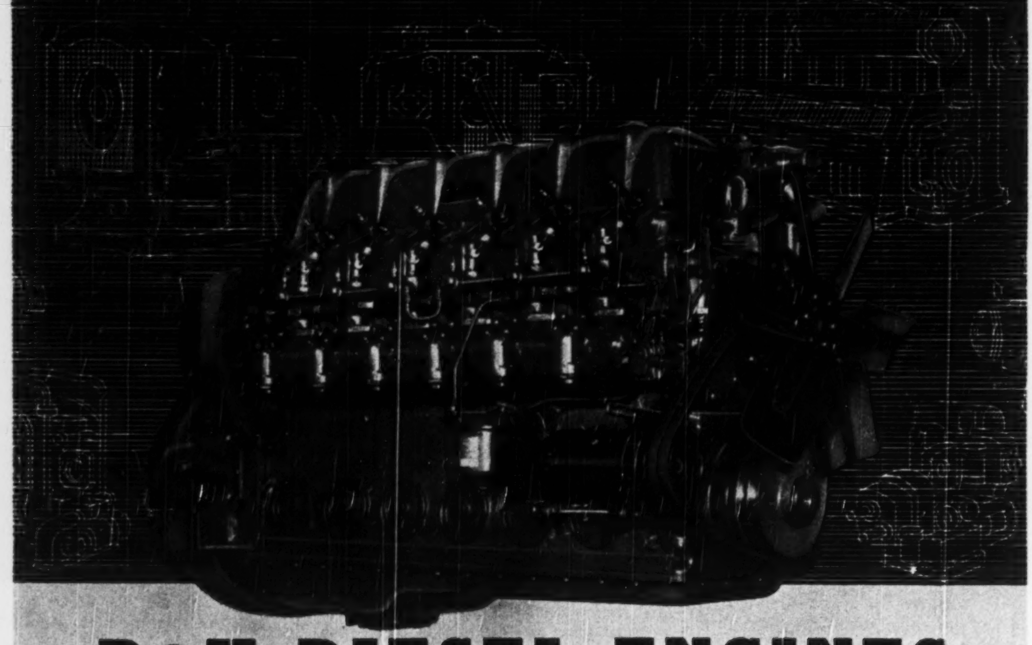

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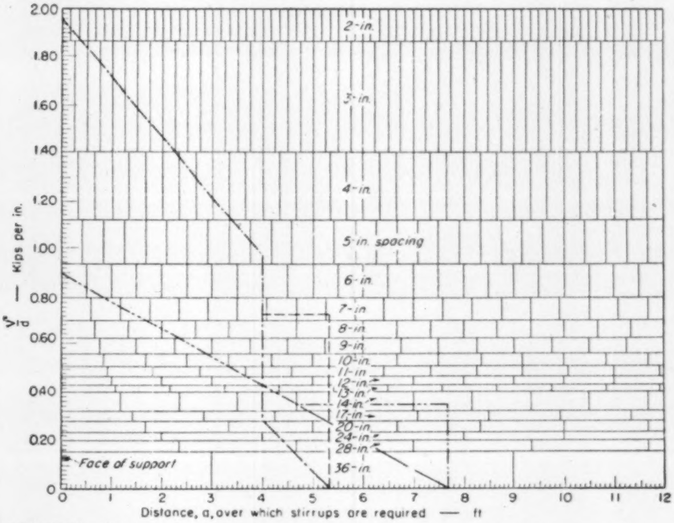


SPACING DIAGRAM gives the location of $\frac{1}{2}$-in. dia. stirrups for concrete beams with uniform and concentrated loads.

Spacing of Stirrups in Beams Found with Little Figuring

The accompanying diagram was designed to give the spacing in concrete beams of $\frac{1}{2}$-in. dia stirrups with a minimum of calculation, whether the loads are uniform or concentrated. Similar charts can be constructed for other size stirrups.

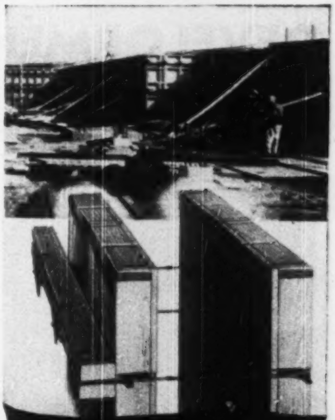
To use the diagram, find the reaction, V; the shear value of the effective beam cross section, V_c; and the distance over which stirrups are required, a. Then, compute V'/d, where $V' = V - V_c$. For concentrated loads only, compute V_x/d and P/d, where $V_x = V' - xw$, x is the distance from the support to the concentrated load, w is the uniform load per foot of beam, P is the concentrated load and d is the effective depth of beam.

For uniform loads, place a straight edge on the diagram between a and V'/d and read off the spacing of the stirrups according to the vertical lines intersected. When the spacing indicated is greater than $\frac{1}{2}$ d, use the last spacing permitted until a is reached.

For example, assume a beam 14 in. wide, 30 in. deep and 28 ft long to support a uniform load of 3.5 kips per ft, for which the spacing of $\frac{1}{2}$-in. dia stirrups at each end are to be computed. $V = 3.5 \times 28/2 = 49$ kips. $V_c = 14 \times 30 \times 0.875 \times 0.06 = 22$ kips. $V' = 49 - 22 = 27$ kips. $V'/d = 27/30 = 0.9$. $a = 27/3.5 = 7.7$ ft. Max. spacing $= 30/2 = 15$ in. According to the diagram, spacing of stirrups should be: 1 at 6 in., 1 at 7 in., 1 at 8 in., 1 at 10 in., 1 at 11 in., 1 at 12 in., and 3 at 14 in.

In the case of both uniform and concentrated loads, place a straight edge on the diagram between V'/d and V_x/d at x and read off the spacing up to the concentrated load, in accordance with the vertical lines intersected. At x, drop vertically a distance equal to P/d. Then, place the straight edge between this point and a to obtain the spacing for the rest of the stirrups.

For example, assume a beam 30 in. wide, 14 in. deep and 24 ft long to support a uniform load of 3.5 kips per ft. and a concentrated load of 9 kips located 4 ft from one end. Spacing of stirrups at this end is to be determined. $V = 3.5 \times 24/2 + 20 \times 9/24 = 49.5$ kips. $V_c = 30 \times 14 \times 0.875 \times 0.06 = 22$ kips. $V' = 49.5 - 22 = 27.5$ kips. $V_x = 27.5 - 4 \times 3.5 = 13.5$ kips. $V'/d = 27.5/14 = 1.965$. $V_x/d = 13.5/14 = 0.965$. $P/d = 9/14 = 0.643$. $a = (27.5 - 9)/3.5 = 5.3$. Max. spacing $= 14/2 = 7$ in. According to the diagram, spacing of the stirrups should be: 2 at 2 in., 7 at 3 in., 4 at 4 in., 1 at 5 in. and 3 at 7 in. Since double stirrups are better for this beam width and to avoid 2 in. spacing, use double stirrups spaced 1 at 4 in., 4 at 6 in. and 8 at 7 in.—T. Z. Chastain, I. E. Morris & Associates, Atlanta, Ga.



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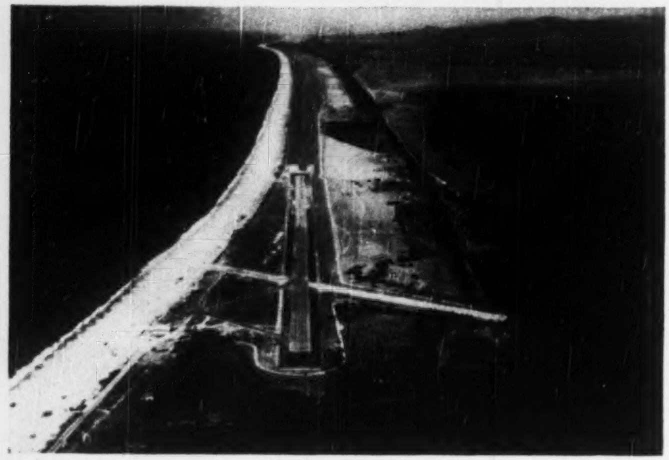


NEW MEXICAN AIRPORT—This airview shows the recently-finished Acapulco airport on the Pacific coast. The 5,000-ft. main runway is wedged on a narrow strip of land with the ocean on the right and the Lagoon of Coyca on the left. There is heavy traffic here of passengers from Mexico City to the popular international resort of Acapulco. The Mexican government is spending $5,900,000 on the Central airport in Mexico City and on a chain of nine airports elsewhere in Mexico. (Compania Mexicana Aerofoto, S. A.)

Japan Development Corp. to spend $100,000,000

Jointly sponsored by the Japan Development Corp., made up of leading business men and industrialists of Japan, and a group of American investors interested in developing tourist facilities in that country, a $100,000,000 building plan is proposed, to be financed entirely by investment of private capital.

One of the first projects will be the construction of a fully modern 1,000-room hotel on the outer grounds of the Imperial Palace in Tokyo.

Future plans include the erection of two extensive trade and cultural centers in Tokyo and Osaka, two trade center in Yokahama and Kobe, and 13 other hotels in important resort areas of Japan.

In charge of the project will be Welton Becket, American architect and engineer, and director of Wurdeman and Becket, the firm which recently designed the Prudential and General Petroleum buildings in Los Angeles. That firm has introduced lightweight concrete into the construction of earthquake-proof skyscrapers.

The Tokyo center will cover a part of the Imperial Palace outer grounds, deeded to the Japan Development Corp. by the Japanese government. Besides the hotel, projected buildings in this center will include a theater, department stores, three office buildings, a 200-unit apartment house, a museum, an art gallery, and many shops.

Except for some American engineers and technicians associated with the architects, Japanese labor will be used exclusively and most of the building materials employed will be those indigenous to Japan. Because of the wage and cost differential, and by using new construction techniques in which Becket and his architectural firm have pioneered, it is estimated that the completed Japanese project will cost approximately half that of a similar building program in the United States.

Australian Steel Works—While the main steel producing centers in Australia are on the east coast, there are plans to develop steel production on the western side of the continent. Engineering representatives of H. A. Brassert & Co., of New York, have been in Western Australia recently investigating the prospects of establishing a steel industry in that state. The engineers recommend geological surveys in the area for ore and limestone, and borings of Leschenault Estuary to determine suitable depth above hard rock to establish an inner harbor. The Minister for Industrial Development says that the cabinet is giving favorable consideration to the investigation.

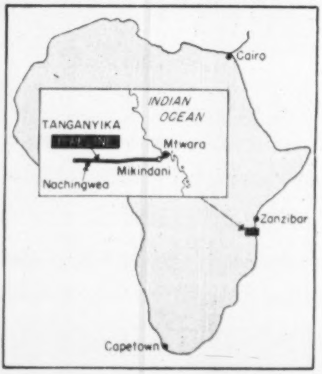
New Tanganyika pipeline is now in operation

Since the opening a few weeks ago of the 130-mile pipeline in Tanganyika, supplies of petroleum have been flowing along the line to the big groundnuts (peanuts) development in Southern Taganyika. Maximum pumping rate is 27 tons an hour.

This 6-in. pipeline was laid in 21 months in what only recently was called part of "darkest Africa."

The line runs from Mtwara, on the coast of the Indian Ocean to the center of the most important groundnuts area, 20 miles west of Nachingwea. It is not underground, but supported just above the ground on logs to insure quick detection of leaks. To safeguard against ruptures due to expansion or movement because of change in temperature, the line was "snaked" not laid straight.

Difficulties encountered when the line was being laid were not confined to those created by the terrain. For the first 80 miles it is barren, deeply ridged and broken and rises at one point to 1,840 ft. above sea level. Farther west it is jungle and scrub. Steel shortages, shipping delays, and strikes all contributed to the delay. Lack of adequate landing facilities made it necessary for all the equipment, including 30 ft. lengths of pipe, and pump and engine sets weighing 16 tons each, to be lightered ashore.

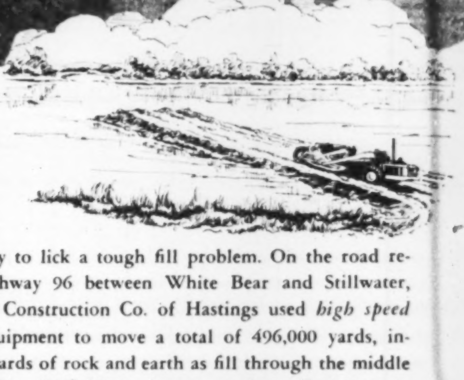


In addition to the line, bulk storage tanks were built at Mtwara and at the Inland Terminal while a pumping station was erected 45 miles west of Mtwara. All the construction was supervised by Shell under the direction of J. M. Imrie, who, with the other Shell technicians, brought experience of similar work from Ecuador, Venezuela, West Africa, Suez, the Far East and Australia.

(Continued on page 50)

1800 YARDS MOVED EVERY 10 HOURS ON A ROAD THAT *runs through a lake...*

After discharging material on the lake fill, the Motor Scrapers turned around by backing the rear wheels off the fill and into the muck forced up from the bottom of the lake. At all times they pulled out easily under their own power.



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- ✓ Double Acting Hydraulic Steering

HERE'S the way to lick a tough fill problem. On the road relocation of highway 96 between White Bear and Stillwater, Minn., Kimmes Construction Co. of Hastings used *high speed* earthmoving equipment to move a total of 496,000 yards, including 72,000 yards of rock and earth as fill through the middle of a small lake. Two LPC Motor Scrapers and two C-114 tractor drawn scrapers have moved the bulk of the material, finishing 90% of the project which was scheduled for completion by August 1, 1950. Each Motor Scraper moved an average of 90 yards each hour of a 10-hour shift, on a 6000-ft. cycle.

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Operating an educational institution like Cornell University is big business, the problems of administration often more complex than those faced by industry in general. Not the least of those problems is plant safety, and, fire protection "with teeth" is a necessity for the multi-million dollar properties which comprise the University . . . for the safety to life of the thousands of students and faculty members who daily make it their home.

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(Continued from page 48)

World Bank makes loan for El Salvador power

El Salvador is a diminutive country hugging the south coast of Central America. Though small, it has always managed to pay its own way out of exports. But the installation of a hydro-electric power plant to replace its present overtaxed and expensive diesel generating system was going to cost the little country more than it could spare. It was going to need outside help. For, without more and cheaper power, economic growth would grind to a halt.

El Salvador had already been told by the U. S. Department of the Interior and by private engineers that a dam on the Lempa river at Chorrera Del Guayabo would give them a constant minimum of 30,000 kw of cheap power.

That much the El Salvadorians knew, but they didn't know how they would pay for it; they knew private foreign capital was pretty much out of the question. What's more they weren't even sure how to go about capitalizing the domestic costs of such an undertaking.

Last spring they took their problem, along with what engineering surveys they already had, to the World Bank (International Bank for Reconstruction and Development). Bank officials told them that the bank probably could help, but that they would need more complete engineering data. The bank suggested they hire a reputable engineering firm prepare a complete report. By mid-summer the Harza Engineering Co. of Chicago had done the job. In August, the World Bank dispatched a mission to El Salvador to survey the country's economy, ascertain the need for the plant, and briefly check the dam site.

By December 14, the mission had reported, the Lampa River Hydroelectric Commisison had been formed, negotiations between the bank and the government completed and El Salvador had its $12,500,000 to cover foreign exchange costs of its power plant.

Also the World Bank solved El Salvador's dilemma of how to raise $5,000,000 worth of local currency. The World Bank is supplying technical experts to help in setting up a local capital market.

L. F. Harza, president of the Harza Engineering Co., Chicago, is now in El Salvador. His company is acting as consulting engineer for the Commission Ejecutiva Hidroelectrica del Rio Lempa of El Salvador, and at the present time is engaged in the design of the Chorrera Del Guayabo Hydroelectric plant.

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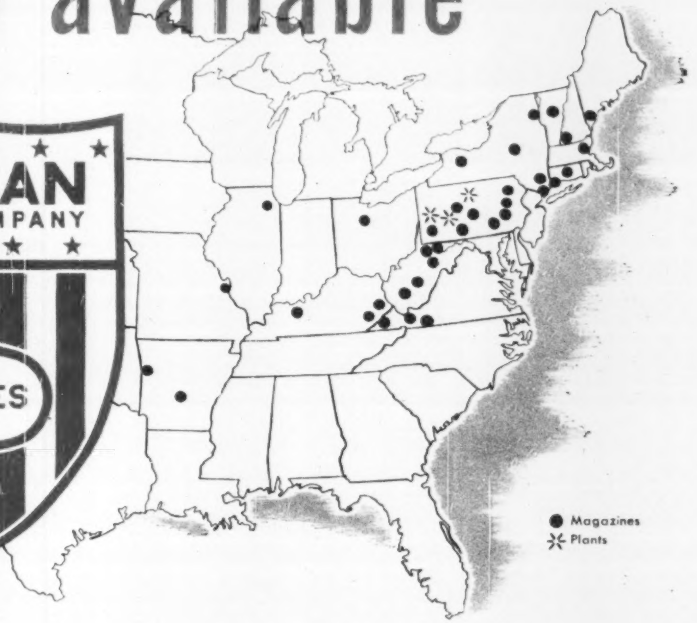

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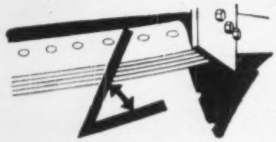
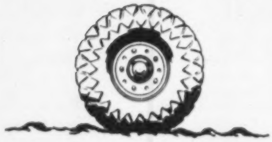


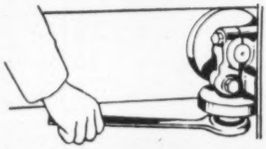
EASY LOADING

Blade angle and design are two points that contribute to good or bad loading characteristics. The tough "Caterpillar" blade is set to shear hard-to-dig material, then direct and guide it into the loading chute. With 3 inches of special hard facing alloy deposited on these cutting edges, the user is assured of a blade that sharpens to a keen edge.



BIG TIRES . . . MORE TRIPS

When ground conditions deteriorate, air pressures are usually reduced to keep tire penetration at a minimum. The big and oversize tires used on "Caterpillar" Scrapers are able to have their pressures greatly reduced without overloading. That means they stay on top, roll more easily, allow hauling in higher gears and aid in piling up real yardage records.



'DOZER-TYPE EJECTION

'Dozer-type ejection rolls sticky clay out of the bowl with ease and precision. Typical of "Caterpillar" finely engineered design are the ejector plate guide rollers. These heat-treated rollers are mounted on adjustable eccentric shafts so that proper clearance may always be maintained between bowl sides and ejector plate. Binding or rubbing problems are eliminated.

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When the chips are down, you can count on a husky "Caterpillar" Scraper to come through for you. Stamina is built into every inch of its hide to stand terrific punishment. Its finely engineered design enables it to speed through jobs that slow down ordinary units. Pair it with its matching "Caterpillar" Diesel Tractor, and you've got a team that saves you money two ways—in higher production and lower maintenance costs.

Pictured here is a "Caterpillar" No. 80 Scraper rated at 18 heaped yards with its matching D8. Owned by Eau Claire County, Wisconsin, this team pays dividends every pay load. Making a trip every 7½ minutes on an 1800-foot round-trip haul, its average production is about 800 bank measure cubic yards per 8-hour day.

You can't talk quality into a machine. You've got to build it in—take a look at the "Caterpillar" Scraper's features and you'll see why this big yellow slugger really rates with men who know earthmoving. Better still, call your nearby "Caterpillar" dealer today for information and a demonstration!

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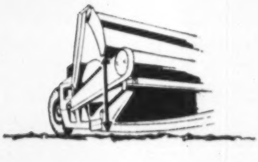
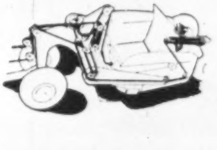


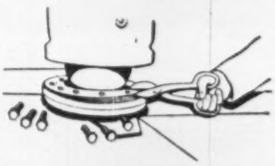
GOOD APRON DESIGN

"The sky is the limit" when raising the aprons on "Caterpillar" Scrapers. Open-top scraper design combined with long apron arms located outside the bowl assure the free ejection of heaping sticky loads. When ejecting fine materials such as sand, the maximum apron height can be reduced to provide a smooth spread with no gaps.



ENGINEERED CABLE SYSTEM

The entire "Caterpillar" cable control system is finely engineered to give constant easy performance. Accurately aligned heat-treated sheaves prevent cable chafing and minimize power drain on the tractor engine. All cables are shielded against abrasive materials, yet one man can easily thread the entire unit while keeping both feet on the ground.



LOW MAINTENANCE COST

Typical of "Caterpillar" in-built quality is the ball and socket joint connecting gooseneck to front axle. The ball is induction hardened with a tough center to withstand both wear and breakage. Spherical design enables the scraper to be maneuvered into extreme positions without binding. Shims are removed as wear occurs and a bronze liner rides between ball and socket to prevent steel-to-steel contact. Lubrication is through a single Zerk fitting.

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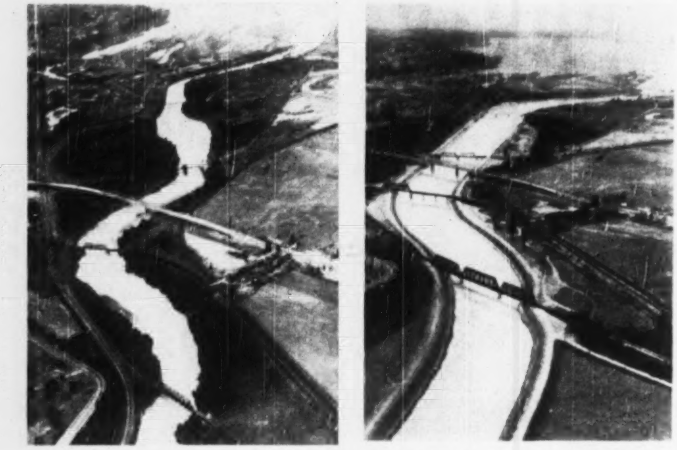


PUYALLUP RIVER CONTROLLED—The above views portray the Puyallup River at Tacoma, Wash., before and after a $3,000,000 flood control project was carried out by the Corps of Engineers. At left, is a view of the river before the curves were eliminated. That at the right shows the river as it now looks with the bridges relocated and the curves straightened. The initial contract, awarded in June, 1947, to the Mason Construction & Engineering Co. of Tacoma for $1,096,857, required reconstruction of two highway bridges, one railroad transfer bridge and two mainline railroad bridges. The second contract, awarded in January, 1948, to Mason and the Osberg Construction Co. of Seattle, included construction of another railroad transfer bridge; the relocation, widening and deepening of 2.2 miles of the river from its mouth through the city; and the construction of 4.4 miles of levee. The project increased the flow of the river from 30,000 cfs, to 50,000 cfs protecting Tacoma's tideflat area.

Sees port improvements pulling new industries

The city planning commission of Buffalo, N. Y., predicts that major improvements to the city's harbor facilities would encourage the location of an estimated $95,000,000 worth of new industries along the Buffalo River. The forecast highlighted a commission report to Army engineers who are preparing to make a preliminary survey of the harbor.

At the same time, the commission directed its staff to make an independent survey of the entire waterfront to coincide with the Army study, and to provide latest information to city officials who plan to ask the legislature to create a port authority in Buffalo.

In the report to Army engineers, the commission recommended that the survey consider three proposed cutoffs which would permit large steamers to reach existing plants or new industries further up the river.

The commission emphasized that "the limited depth of the river makes it impossible for the largest existing lake ships to deliver full loads; its winding course prevents them (even if unloaded) from reaching those industries which are upstream from the Ohio St. bend. All ships now being built or planned for the future are big ships which cannot get past this bend in the river. They require a deeper harbor."

North Carolina port plan approved by state group

North Carolina's Council of State has approved action of the State Ports Authority in instructing engineering firms to proceed with the drafting of preliminary plans and specifications for port improvements at Wilmington and Morehead City at an estimated cost of $6,000,000.

The Ports Authority recently asked the engineering firm of Robert and Co. of Atlanta, Ga., to draw plans, specifications and cost estimates for facilities at Wilmington providing dock space for not less than three ships, and two transit sheds, storage warehouses, and a vacuum process fumigation plant, along with necessary roads, railroad connections and other utilities. At the same time, it asked Carr and J. E. Greiner Co., of Durham, N. C., and Baltimore, to draw plans, for similar work on docks, warehouses etc. at Morehead City.

The Wilmington project is estimated at around $4,000,000, and the Morehead City work at around $2,000,000, but Col. George W. Gillette, Ports Authority director, says the figures are tentative.

Size of Ottawa tripled

Enlargement of Ottawa, Ont., to three times its former size, as a major step forward in the National Capital Plan of the federal government, took place on Jan. 1 through annexation of two large suburban areas. Much engineering work is involved by the change. A $2,000,000 sewage disposal project is expected to go forward to be ready in 1952. It will be connected with the present sewerage system but many miles of new sewers will be necessary.

Construction, immediately, of a 24,000,000-gal. water reservoir in the west end will postpone for a time the necessity for duplicating the 42,000,000 gpd of the water treatment plant.

The new area includes the two airports serving the city. Service to these and the newly developed housing areas will necessitate much road construction. Two small areas there are now included within the city boundaries, but as separate municipalities. These are Rockcliffe and Eastview, high-income and low-income areas, respectively. It is expected that they will be annexed to the city soon to clear the way for the long-range plan for the development of the whole Ottawa area.

Milwaukee sees new mark

City and county construction in Milwaukee, Wis., was high last year but it is expected to be even greater this year. The city, the county, the school board and the metropolitan sewerage commission will have at their disposal in 1950 about $25,600,000 in new cash for construction projects.

The city also has another $14,172,000 in unspent balances from its long-term improvement program, much of which might be used this year. The city and the county also have large borrowing margins.

Topping the city's list is the start on its proposed 35-mile system of expressways. Engineering plans are being made to begin construction of the expressway feeder route on 44th street. The city will also try to get under way its plans for a traffic interchange at N. 6th and W. Clybourne streets. There will also be street openings and widenings where needed.

Much money will be spent for housing, hospitals, sewerage, schools, and other public buildings.

Municipal Briefs

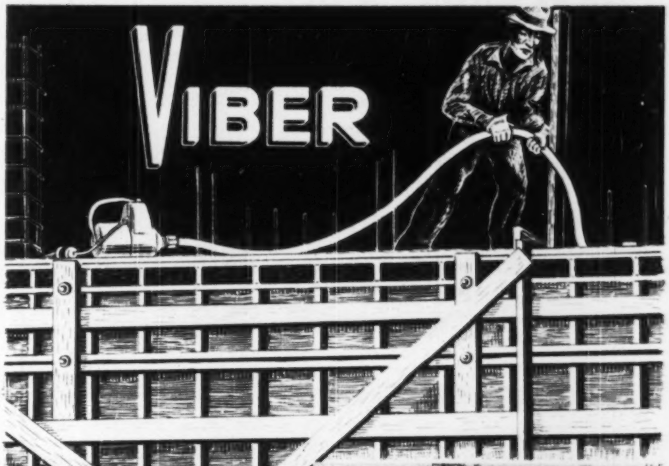
Million Dollar Garage—Eglin Garages, Inc., of Philadelphia, Pa., has announced plans for a second $1,000,000-garage building to be constructed downtown. The 3-story building will be of structural steel and concrete and will be located at 15th and Sansom Sts., in the heart of the business district. The same firm has in operation a recently completed $1,000,000-building at Juniper and Locust Sts. W. F. Stillman of Philadelphia is the architect.

Many Civic Jobs in N. D.—During 1949 eighteen communities in northwest North Dakota instituted sewer, water and paving improvements to cost more than $2,000,000. During the year 1,055 additional families were given sewer connections, and 215 blocks of city streets were paved or graveled.

Model Traffic Ordinance—At Evansville, Ind., a new ordinance establishes a traffic division in the police department, creates the office of city traffic engineer, provides for a traffic violations bureau in the city court, and creates a traffic commission. One of the city's main arteries has been provided with signals, median divided, lane markers and channelization. Parking has been changed from angle to parallel.

Tri-City Sewerage—A sewage disposal system is to be undertaken by Ansonia, Derby and Shelton, Conn. Vincent B. Clarke, city engineer of Ansonia and Shelton, and George E. Thompson, city engineer of Derby, will consult with engineering firms and obtain price quotations for a joint project. A Tri-City Sewage Disposal Plant Investigating Committee has been formed with Ralph V. Tippet, Ansonia, as chairman. A special session will be scheduled as soon as price quotations are obtained and the advisability of proceeding with the project will be discussed. It is then expected an engineering firm will be selected and preliminary surveys started at once.

Public Housing Programs—Local governments in 227 cities have given official endorsement to public housing programs, the Public Housing Administration reports. They intend to build a total of 221,391 units of low-rent housing to accommodate more than 800,000 persons in the low income group. All of the housing is expected to be developed in the next two years.



Now in use on one of the largest architectural concrete construction jobs in the United States

New architectural and engineering techniques are being pioneered on the Metropolitan (Parklabrea) Housing Project in Los Angeles.

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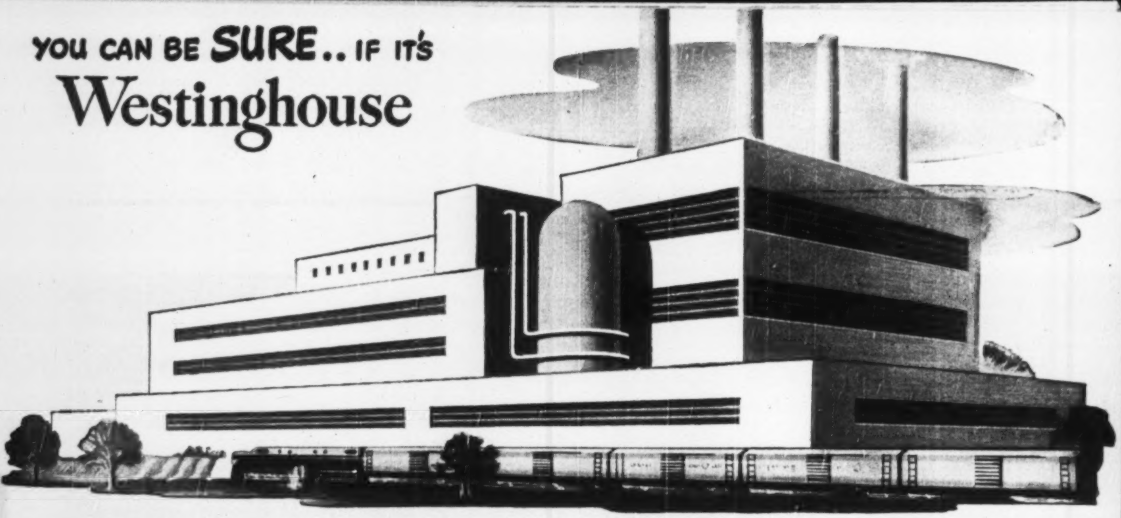
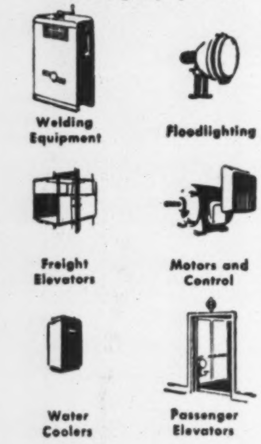


Construction and Building Equipment



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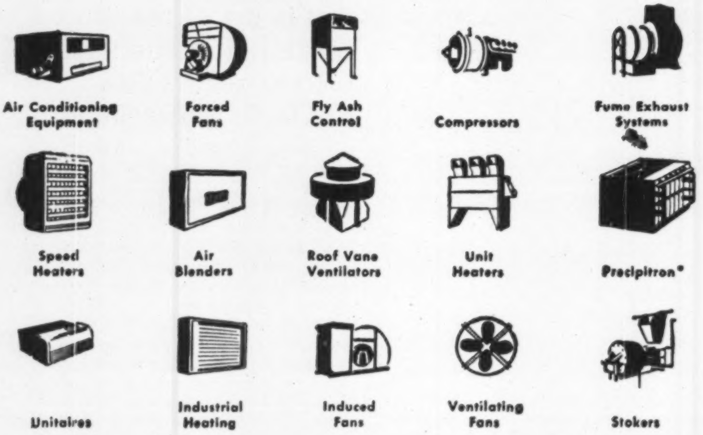

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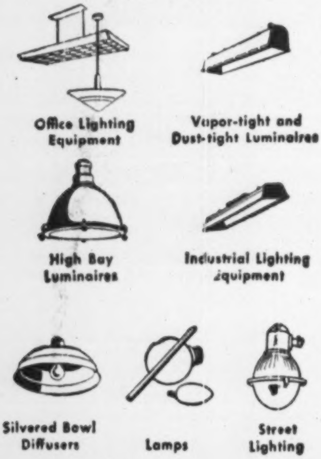
Lighting Equipment



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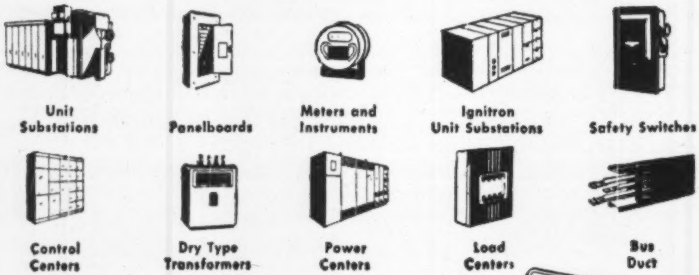

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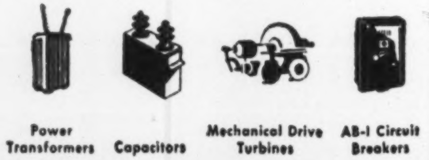

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MEN AND JOBS

H. W. Morrison, president of Morrison-Knudsen Construction Co., receives life-membership certificate in Idaho Society of Engineers from retiring society president Orland C. Mayer, Boise. Occasion was 40th annual banquet of group at Boise.

Lieut. Col. Clarence C. Haug has been named assistant to Col. Joseph Gorlinski, Sacramento, Calif., district engineer, Corps of Engineers. He was formerly the commanding officer of the U. S. engineering research and development laboratories in Yuma, Ariz. He succeeds **Lieut. Col. Wilmont R. McCutchen,** who has gone to Washington, D. C., for permanent duty in the military construction branch of the Chief of Engineers office under **Col. McDonald Weiner.**

F. O. Kugel, formerly chief engineer in charge of the Lake Erie Cleveland Office of Beach Erosion in the Ohio Department of Public Works, has been appointed chief of the Division of Beach Erosion in the new Ohio Dept. of Natural Resources.

James D. Hodges has become a field engineer in the north central states for the Calcium Chloride Association. He is a 1939 graduate of the University of Illinois and was an officer in the U. S. Army Corps of Engineers. He spent 30 months in the South Pacific as a captain supervising construction of main supply roads and airports.

Col. Glen G. McConnell, Jr., commanding officer of the 112th Transportation Corps Battalion, Ohio National Guard, Columbus, O., has been appointed city engineer of Troy, Ohio, succeeding E. H. Bagford. He is a civil engineering and architectural graduate of Ohio State University.

Several important personnel changes have been announced in the Walla Walla, Wash., district of the Corps of Engineers. **Lt. Col. William J. Ellison, Jr.,** resident engineer at McNary Dam for three years, has been transferred to Fort Mead, Md., **S. G. Neff,** formerly the district executive, is the new McNary resident engineer. **Lt. Col. V. Frisby,** in charge of railroad and highway relocations for the district, will leave in January for Okinawa. He will be succeeded at Walla Walla by **R. R. Garnett,** now resident engineer in charge of levee work along the Yakima and Columbia Rivers at Richland.

Ralph F. Rhodes, head engineer and technical advisor of the Savannah, Ga., district, Corps of Engineers, is retiring after more than 40 years of continuous service. However, he will continue to work on a contract basis as a consultant for the Engineers and for the Tidal Hydraulics Committee, a national organization of experts which supervises all studies of tidal hydraulics made by the Engineers.

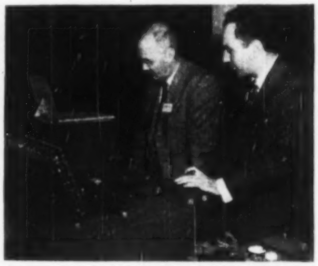
Col. Dwight F. Johns, West Point, 1916, division engineer of the South Pacific Division, U. S. Army Corps of Engineers, has retired after 37 years of active military service. Colonel Johns took over his assignment at the Oakland, Calif., headquarters in 1947, following duties as assistant chief of engineers for military operations, in Washington, D. C. During the war Col. Johns was chief engineer, U. S. Forces in the Netherlands East Indies. He was transferred to Australia where he was successively chief engineer, assistant chief of staff G-4, and chief of staff for the Services of Supply in the Southern Pacific Area.

A. F. Ghiglione, chief of the construction division in the Juneau office of the Alaska Road Commission, becomes chief engineer succeeding **Ike Taylor,** retired. He worked for the commission during summer vacations while attending the University of Washington before 1931, and joined the commission staff after receiving his civil engineering degree from M.I.T. He has been chief of the construction division since August, 1948. During the war, he was contract superintendent of the 13th Naval District at Seattle, Wash.

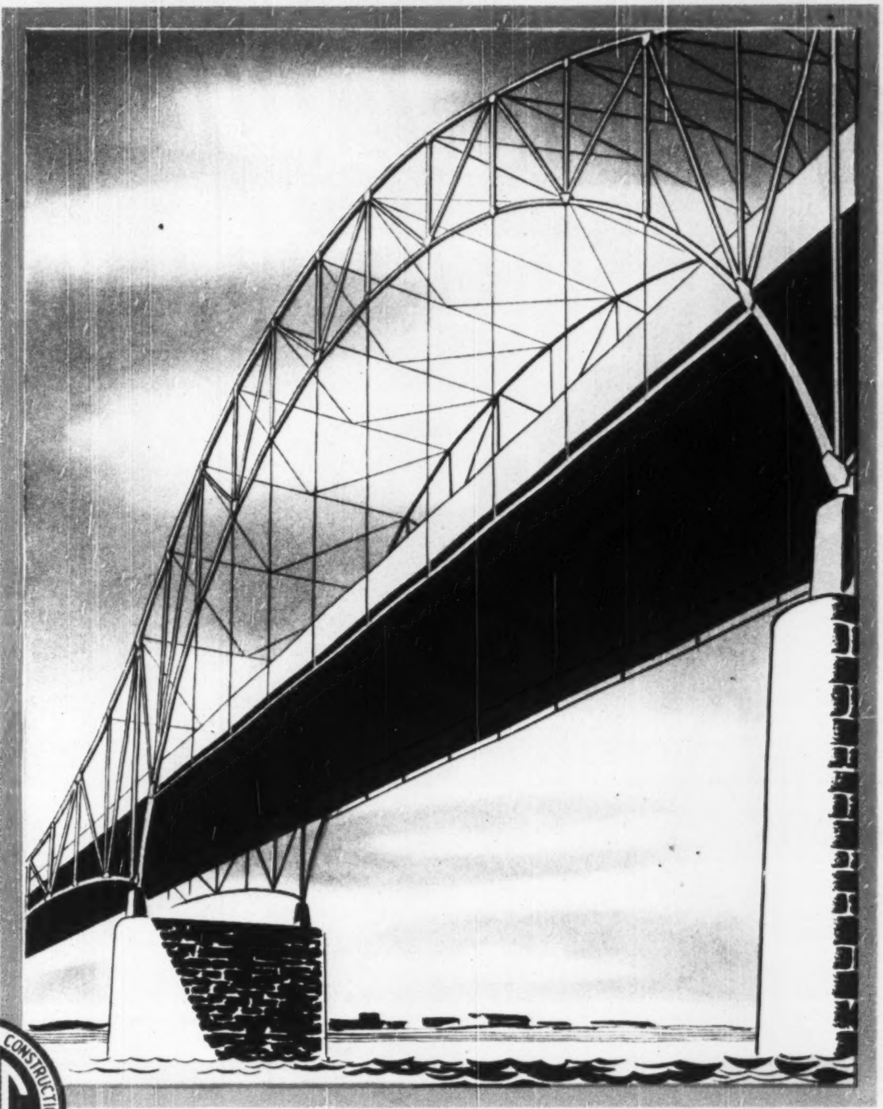
Lee H. St. John, civil engineer, has been appointed chief deputy on the staff of the King County Assessor at Seattle, Wash. He formerly was chief utility engineer for Holabird & Root, Chicago architectural firm, and senior civil engineer with the Corps of Engineers at Salt Lake City and Seattle.

William F. Eagan, veteran, has been appointed public works commisisoner of Lackawanna, N. Y. He is a veteran of World War II and has been identified with the Lackawanna De-

(Continued on page 64)



Inspecting an oscillograph in the exhibit building during the recent University of California Street and Highway Problems Institute are F. N. Hveem, staff material and research engineer, California Division of Highways, and B. A. Vallerga, civil engineering lecturer at the University of California. This apparatus will be mounted in a mobile test unit and used to measure vibrations in highway pavements and structures throughout California. This information will be used to determine the stresses in the structures.



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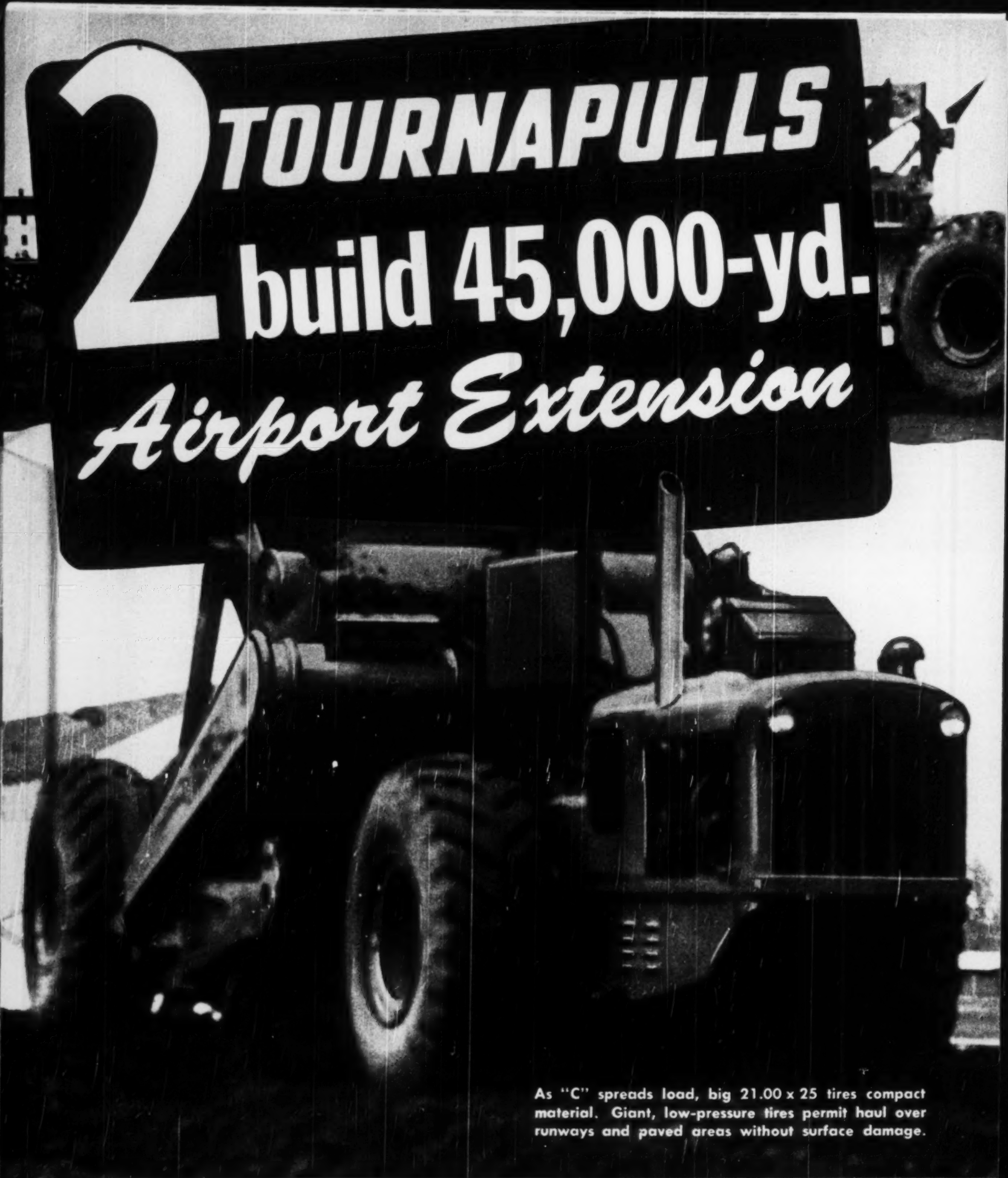

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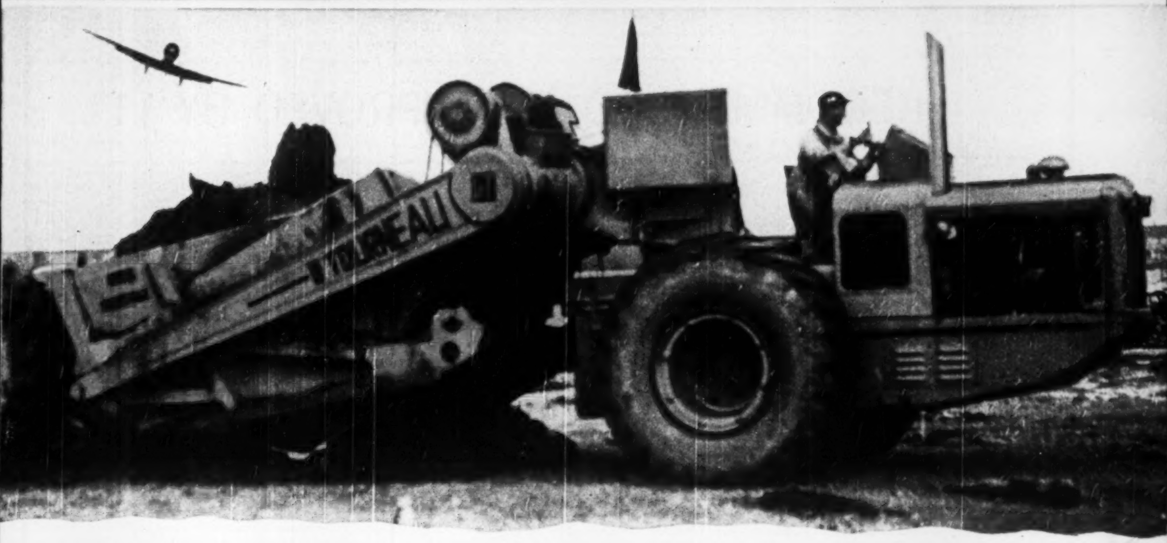


"Dirtmovers", Minneapolis contractors, used 2 fast-stepping, electric-control C Tournapulls to put their dirtmoving into high production on 45,000-cu. yd. airport extension job for CAA and MAC at the Wold Chamberlain Airport, near Minneapolis, Minnesota. They got these yardage results:

"C's" move 288 Pay Yards Per Hour on 2000' Round Trip Haul

Moving sod and top soil, Tournapulls got heaped loads of the high-void material in 45 seconds . . . spread in 24 seconds . . . completed 2000' round-trip over well-maintained haul roads every 3 minutes. Actual load count for one hour tallied 32 trips for the 2 "C's". At conservative estimate of 9 pay yards per load, production figured 144 cu. yds. per unit. Giant, ground-gripping 21.00 x 25 tires were of material help in loading from soft shallow cuts . . . and the low-pressure pneumatics also enabled Tournapulls to cross and re-cross concrete runways without surface damage.

TOURNAPULLS Pay Off in More Yardage . . . More Jobs Per Season

Production performance like this is possible because Tournapulls accelerate fast, maintain high average hauling speed — even on short hauls, cut seconds off every cycle. Then, too, revolutionary, power-proportioning differential supplies constant lugging power for pulling through loose material, mud and sand . . . gets you on and off the toughest fills, up slick grades fast. Simple finger-tip controls and positive electric-power steer keep production high, because they make operating easier . . . and keep Tournapull operators working at top efficiency throughout the day.

Don't wait another day to check the extra profits this modern, high-speed, rubber-tired C Tournapull can earn for you. Let us show you other production figures on jobs like yours . . . jobs where C Tournapulls are proving their ability to move your dirt at lowest net cost per yard. Check now so you can get these high-production units on your job early this season.

LETOURNEAU PEORIA, ILLINOIS

JOB-PROVED [illegible]

TOURNAPULLS

MORE YARDS PER HOUR WITH RUBBER-TIRED POWER

RECOMMENDED OR APPROVED BY 111

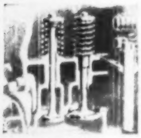
Socony-Vacuum Representatives who work with your maintenance men call on 84 years of experience to assure the most effective lubrication program for your particular operation.

ENGINE AND EQUIPMENT BUILDERS—

DELVAC OILS

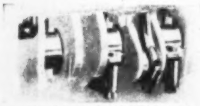
Reduce Downtime · Speed Work · Cut Costs!

These famous heavy-duty oils for gasoline and Diesel engines give proved performance under toughest conditions . . .



. . . Keep Engines Clean

Delvac "Series 900" Oils have exceptional resistance to oxidation, are detergent and dispersive. They minimize formation of lacquer and other harmful deposits—hold contaminants in suspension until drained at regular periods. Your engines stay cleaner and run better.

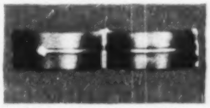


. . . Protect Against Wear

Delvac "Series 900" Oils are made from specially selected, solvent-refined base stocks that provide ample "body" under the high temperatures of heavy-duty service. Their rich lubricating films give rings, pistons, cylinders, bearings — all vital parts — full protection against wear.

. . . Assure Full Power

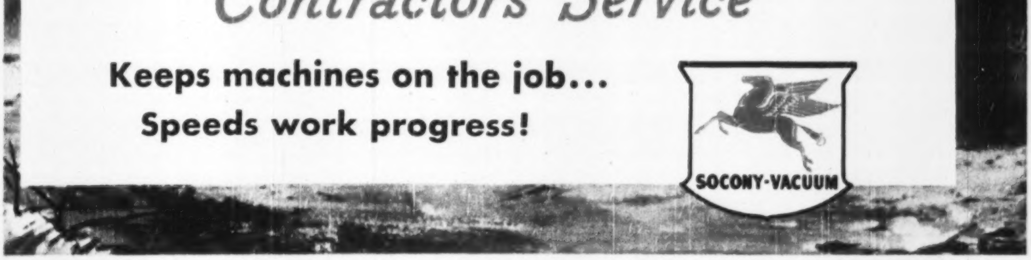
Delvac "Series 900" Oils assure proper ring seal, guard against blow-by. This means more efficient compression and combustion . . . full, dependable power output . . . maximum fuel economy. Your machines do more work in less time, cost less to run—even under toughest conditions!



. . . Prolong Bearing Life

Delvac "Series 900" Oils have high chemical stability, help protect hard alloy bearings against corrosion and wear. Bearing shown—photographed after 160,000 miles of service — is still good for thousands of miles . . . proof that Delvac Oils prolong bearing life.

SOCONY-VACUUM OIL COMPANY, INC., and Affiliates: MAGNOLIA PETROLEUM CO., GENERAL PETROLEUM CORP.



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Keeps machines on the job...
Speeds work progress!

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Builds at Low Cost with...

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Railway freight depots . . . truck line terminals . . . warehouses . . garages . . these are some of the many uses for Butler Steel Buildings in the Transportation industry. They serve hundreds of commercial and agricultural uses, too. These permanent, adaptable buildings cut costs (often up to 50%). Write today for full information.

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5 TON
7 TON
9 TON
11 TON
14 TON

Through repeated satisfactory experiences users have come to expect greater value in Rogers trailers; and they get it assuredly in these new tilt deck models.

They embody extra strength — easier loading — improved haulability and absolutely reliable braking.

But the new feature appreciated by all, is the hydraulic ram which controls and cushions the deck movement when loading or unloading heavy equipment.

There are sizes for all needs in three types — two wheel on a single axle — four wheel on tandem axles — and four dual tire wheels on tandem axles.

Write for literature and learn how these trailers can effect savings in hauling many kinds of equipment — faster and more economically.

ROGERS TRAILERS
EXPERIENCE builds 'em PERFORMANCE sells 'em
ROGERS BROTHERS CORPORATION, 135 Orchard St., ALBION, PA.

(*Continued from page 58*)

partment of Public Works for the last two years.

Guy W. Pinck, deputy chief engineer of the New York State Department of Public Works, is retiring. Former state commissioner of canals and waterways, he has worked for the state for 38 years. He has been deputy chief engineer since Aug. 1, 1944, previously division engineer at Syracuse.

Gerald J. Fitzgerald has been appointed commissioner of public works of Utica, N. Y., succeeding James Jones. Mr. Fitzgerald held the post from Jan. 1, 1946 until May 15, 1948, when he resigned to become general superintendent for Midstate Builders, Inc. He was an assistant engineer in the department of engineering of Utica for 22 years, supervising the construction of the parkway for the Department of Parks. He became a specialist in sewer construction and design and supervised most of the sewer construction and a large part of the paving work in the city.

Ralph H. Fifield has been named chief engineer for the Montana state water conservation board, replacing **Fred E. Buck** who remains as state engineer, working with river compacts and interstate and international stream problems. Fifield formerly was chief construction engineer for the water conservation board.

Arthur J. Benline, superintendent of the department of Housing and Buildings, Manhattan, N. Y City, has been promoted to captain in the Civil Engineer Corps, U. S. Naval Reserve. As commander of the 70th Seabee Battalion, he served in the North African and Mediterranean campaigns. The battalion also participated in the two Iwo Jima assault landings.

Guy B. Panero, head of the New York engineering firm bearing his name, recently announced the opening of a new branch office at 1408 G S., N. W., Washington, D. C. **Walter L. Rubel,** a principal associate and an engineer for 30 years, will be in charge of the Washington branch.

New county engineers in Ohio recently appointed to fill vacancies are: **Albert Seabright,** Hocking County, at Logan; **Charles Eliot**, Delaware County, at Delaware; and **Ivan Earhart**, Preble County, at Eaton.

C. Glenn Smith, King County engineer at Seattle, Wash., in 1947-48, has been appointed city engineer at nearby Puyallup, Wash. He has been engaged

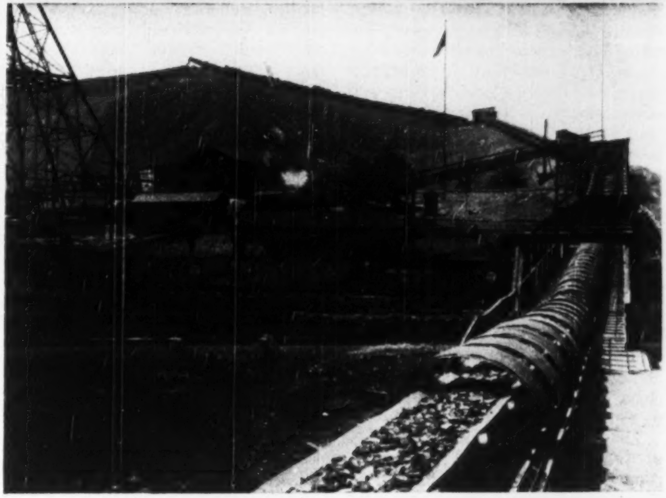
Herman Rohr, water superintendent at Britton, S. D., operates the new 200-gpm. fluoride-removal plant as F. J. Maier, sanitary engineer of the USPHS dental public-health division, checks performance. Mr. Maier designed and supervised construction of the plant.

in engineering for 28 years in and around Seattle.

Robert K. Creighton, executive director of the Asheville, N. C., Housing Authority, has resigned to go with the Slum Clearance and Urban Redevelopment division of the Housing and Home Finance Agency in Washington, D. C., and has been succeeded by Henry A. Johnson, formerly of the Wilmington, N. C., Housing Authority. Prior to taking the Asheville post, Creighton was executive director of the Raleigh, N. C., Housing Authority and at one time was regional representative at Atlanta, Ga., for the National Housing Agency.

Col. John S. Seybold, Garrison district engineer, Corps of Engineers since August, 1947, has been ordered to Missouri River division headquarters at Omaha, Neb., and is replaced at Garrison by Col. F. M. Albrecht of Fort Sam Houston, Tex. It is expected that Colonel Seybold's assignment will be followed by overseas service. He has been an army engineer for nearly 30 years since his graduation from West Point.

H. T. Miard, who has been with the British Columbia public works department since 1947, has been named divisional engineer for the Nelson, B. C., district. He succeeds **O. P. Roberts**, who has been named divisional engineer at New Westminster, while **R. G. Harvey** succeeds Mr. Miard as district engineer.



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BUILT FOR THE TOUGH JOBS!

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When trouble comes by the ton . . . whether it's heavy abrasives like ore and rock or wet, gritty materials like fines and slag . . . the easiest, most dependable and most economical way to move it is on a Hewitt-Robins conveyor belt.

For over half a century the Hewitt Rubber Division of Hewitt-Robins Inc., has pioneered in making the right belt for every conveyor installation. Today, engineers the world over instinctively specify Maltese Cross® where the going is really tough, Ajax® for general service, and Conservo® for lighter applications and portable conveyors.

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TRANSMISSION BELTING • VIBRATING CONVEYORS, FEEDERS AND SCREENS

EDUCATION and RESEARCH

Massachusetts provides courses for sanitarians

The first class of prospective municipal sanitarians has entered the recently opened New England field training center at the University of Massachusetts, Amherst. Its members are taking an intensive, advanced-training course of 12 weeks in environmental sanitation. Practical field work, as well as instruction in bacteriology, water chemistry and industrial hygiene, is included.

• **Fills a need**—When it was found that many communities employed health department personnel whose training was far from adequate, Massachusetts decided to provide this type of advanced training for sanitarians. The center was established by the U. S. Public Health Service, the Massachusetts Department of Public Health, and the University of Massachusetts. It is the ninth link in a chain of such health centers planned by the U. S. Public Health Service.

Field work includes the inspection of municipal sewage plants, water supply, beverage and artificial ice plants, swimming pools, dairy farms, meat packing establishments, factories, schools and private homes.

• **Towns help, too**—More than a score of towns and cities in the Connecticut Valley are cooperating with the university to help make the program a success. A new union health department law provides that communities of under 35,000 population not having adequate health departments eventually shall join union, or federated, boards of health comprised of similarly handicapped places, so that effective public health programs for all may be provided under union health board direction. It is partly to provide fully trained men for this work that the special courses have been established.

Similar courses are now being offered at centers in Atlanta and Savannah, Ga.; Columbus and Cincinnati, Ohio; Denver, Colo.; Topeka, Kan.; and Albany and Troy, N. Y.

Carnegie Tech program gets development grant

Carnegie Institute of Technology, Pittsburgh, has received a $100,000 grant in support of its "Carnegie Plan of Professional Education," specifically in the College of Engineering and Science. The grant was made by the Carnegie Corp., of New York.

Tech's President Robert E. Doherty says the gift is not an addition to endowment but is an operating fund to be used in the next three years in further developing the plan.

The Carnegie Corp. has no direct connection with the institute, which must compete for corporation funds on the same basis as any other institution. Charles Dollard, president of the corporation, said the gift represents "in a real sense a tribute to Dr. Doherty's accomplishments and a vote of confidence in President-Elect J. C. Warner, who will take over when Dr. Doherty retires this year."

The plan, which Dr. Doherty began to build at Carnegie 14 years ago, aims at equipping students to develop from later experience what they need to do their jobs well and to live intelligent lives. In carrying out the plan, Carnegie changed its teaching methods and what it teaches its students, in both technical and social relations courses.

Tau Beta Pi Fellowships

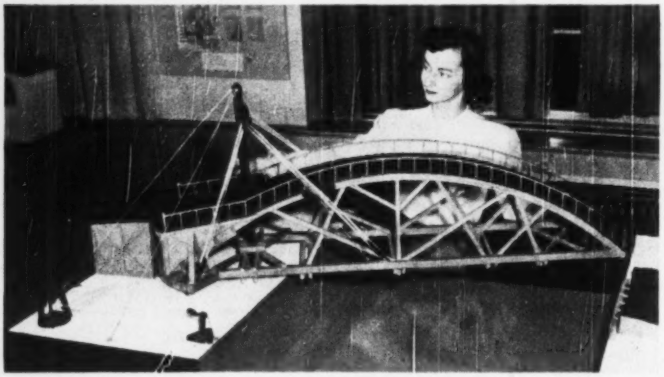
The 17th annual program of Tau Beta Pi fellowships for graduate study in engineering during the school year 1950-51 has been announced. Members of Tau Beta Pi, the engineering honor society, are eligible for the seven awards which amount to $1200 each.

Application must be mailed by Feb. 28, 1950, and awards probably will be announced by March 31, 1950.

For full information write to Paul H. Robbins, Director of Fellowships, 1121 Fifteenth St., N.W., Washington 5, D. C.

Construction Education—The Carolinas Branch, A.G.C., is working to raise $100,000 as an endowment to support a construction education program at North Carolina State College. About half the fund has been raised.

Research Division—The research personnel and facilities of the Esselen Research Corp. of Boston and the U.S. Testing Co. Inc. of Hoboken, N. J., have been combined in the Esselen Research Division at 857 Boylston St., Boston 16, Mass.



15th century construction in Da Vinci exhibit

Leonardo Da Vinci, 15th century Italian scientist-architect-artist-inventor, had a design for almost everything. Above is a model for a fortress bridge over a moat which is designed to swing instead of lift. At right is Da Vinci's design for a pile driver. These models by Roberto Guatelli are on display at Edison Museum, Dearborn, Mich. (Wide World Photos)

A FREE SERVICE

Let Fenestra Engineers help you plan Industrial Daylighting and Airation for specific plant needs

Calculating the exact amounts of daylight and fresh air needed . . . bringing them deep into the interior of the plant . . . these are problems as varied as industrial plants themselves. The answers to those problems can save thousands of dollars by increasing production—decreasing waste.

Choice of window types and decisions on their placement call for detailed engineering study . . . study Fenestra* is equipped to make for you. For more than forty years the Fenestra Department of Engineering Research has been working out solutions to daylighting and airation problems for specific plants.

This is a free service. Send your early plans to Fenestra Engineers . . . let these experts apply their engineering experience on windows to your individual requirements. If you wish, they can work directly with you.

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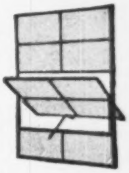
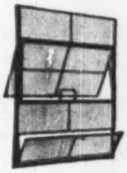


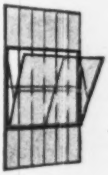
COMMERCIAL PROJECTED WINDOW

Popular for efficient, economical screening or shading—vents do not interfere. Open-out vent serves as a canopy over opening, protecting interior against rain; open-in vent is a built-in windguard, shedding water outside.



SECURITY WINDOW

A steel window with integral steel grille to bar prowlers. Passage of material is checked, too. Ideal for first floors, windows bordering fire escapes and windows near roofs of adjoining buildings.



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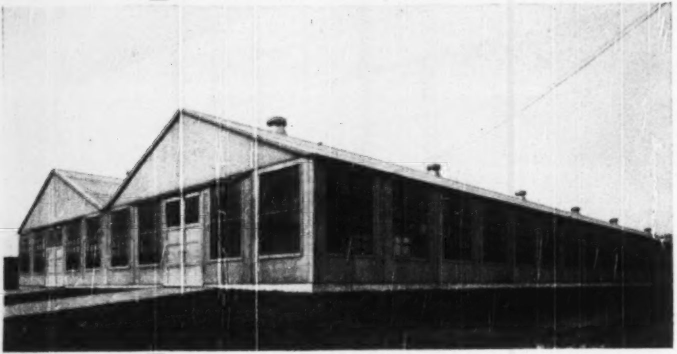

For scores of industrial, commercial and general service requirements, *Stefco's the buy!*

- Up faster with less labor!
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If you're planning new buildings—regardless of style or type of construction—find out now how Stefco can meet your needs. Full details without obligation.

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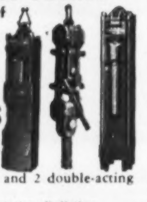

Now made in complete, standardized line of 10 double-acting hammers, 5 single-acting hammers and 2 double-acting extractors.

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ELECTIONS AND ACTIVITIES

C. C. Willborn, Birmingham, has been elected president of the Alabama branch, Associated General Contractors of America. He succeeds R. Hugh Daniel. Other officers: Houston Brice, Jr., first vice-president W. R. J. Dunn, second vice-president; C. F. Hooks, treasurer; and J. B. Rawls, executive secretary. Paul Hunter was elected chairman of the executive committee and John Latham and Mr. Daniel as members.

George E. Tomlinson, assistant director of the project planning branch of the Bureau of Reclamation, has been elected president of the Washington, D. C., Society of Engineers. Other officers: Archie N. Carter, vice-president; Clifford A. Betts, secretary and Bernard F. Locraft, treasurer. Board of directors: H. W. Hemple, George W. Reiber, Roy L. Orndorff, Wilbur H. Simonson, Robert Gaylor and E. J. Stocking.

The Spokane, Wash., chapter of the A.G.C. has re-elected Nels Degerstrom president and elected Jack Clifton and George Seebeck vice-presidents, Roy L. Bair and Leonard Parr as directors. Degerstrom was a charter member of the chapter 29 years ago.

Ohio Beach and Shore Preservation Association has elected C. E. Jolly, president; J. E. Dale, first vice-president; Castle Smith, second vice-president; and Edward P. Trepinski, secretary-treasurer.

Glenn B. Woodruff, San Francisco consulting engineer, has been elected president of the San Francisco Section, American Society of Civil Engineers for 1950. He will succeed Austin W. Earl, consulting engineer. Mr. Woodruff was engineer of design on the San Francisco-Oakland Bay Bridge. John S. Longwell, chief engineer and general manager, East Bay Municipal Utility District, Oakland, was chosen as a new vice-president. Continuing as vice-president is Clement T. Wiskocil, professor of civil engineering, University of California, R. D. Dowell, civil and structural engineer, will serve again as secretary-treasurer.

Fred M. Sloane, division engineer of the C. M. St. P. & P. Ry, was elected president of the Wisconsin section of the A.S.C.E., Charles W. Yoder, structural engineer for the Portland Cement Association was elected first vice-president; Carl R. Holdampf of Klug & Smith Construction Co. second vice-president, Ralph H. Boeck, secretary-treasurer and Prof. James E. Woodburn of the University of Wisconsin, and Prof. O'Neil Olson of Marquette University, directors.

The Fox River Valley chapter of the Wisconsin Society of Professional Engineers elected Francis Euclide, city engineer of Green Bay, president. Others elected are: James Bambery, Kaukauna, vice-president, R. W. Frazier, Appleton, Secy-Treas; Berry Brevik, Appleton, Robert Poss, Marinette, and William Mitchell of Appleton, directors.

MAJOR MEETINGS

Associated General Contractors of America, national convention, San Francisco, Calif., Feb. 27-March 3.

American Road Builders Association, annual meeting, including Pan-American Division, Netherland Plaza Hotel, Cincinnati, Ohio, March 6-9.

Mississippi Valley Conference of State Highway Department, Edgewater Beach Hotel, Chicago, Ill., March 9-11.

American Railway Engineering Association, Palmer House, Chicago, Ill., March 14-16.

Concrete Reinforcing Steel Institute, annual meeting, The Shamrock Hotel, Houston, Tex., March 20-25.

New Jersey Sewage Works Association, annual convention, Hotel Stacy-Trent, Trenton, N. J., March 22-24.

Highway Engineering Conference, University of Utah, Salt Lake City, March 29-31.

Canadian Section, American Water Works Association, General Brock Hotel, Niagara Falls, Ont., April 3-5.

New Jersey Society of Professional Engineers, Essex House, Newark, N. J., April 14-15.

Highway Transportation Congress, Mayflower Hotel, Washington, D. C., April 25-27.

American Society of Civil Engineers, spring meeting, Los Angeles, Calif., April 26-29.

Maryland-Delaware Water and Sewerage Association, Fort Cumberland Hotel, Cumberland, Md., April 27-28.

Third Inter-American Congress of Municipalities, New Orleans, La., May 2-5.

N. Y. State Society of Professional Engineers, Hotel Statler, New York City, May 4-6.

American Society of Civil Engineers, Pacific Northwest Conference, Winthrop Hotel, Tacoma, Wash., May 5-6.

U. S. Conference of Mayors, Waldorf-Astoria Hotel, New York City, May 11-13.

Florida Highway Conference, University of Florida, Gainesville, Fla., May 11-23.

American Water Works Association, annual conference, Convention Hall, Philadelphia, Pa., May 21-26.

In 1950

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—knowing that it will do its job for long years to come, quietly, smoothly, efficiently

For automatic, trouble-free handling of crude sewage and waste—30 gpm up to 600 gpm—the famous Shone Pneumatic Ejector is known and trusted throughout the world. Here is a mechanical device which was apparently "conceived in perfection," for since the first Shone was built no change has been made in its basic design—none was needed!

Plus-advantages which have been responsible for the efficiency and dependability of the Shone include:

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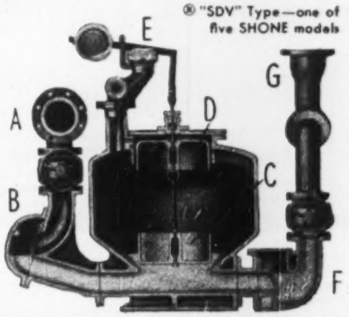
- **C** Lower Bell
- **D** Upper Bell
- **E** Pilot Slide Valve
- **F** Discharge Check Valve
- **G** Discharge Pipe



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Tough ground conditions don't stop a Sauerman Machine. It will dig and haul anywhere—on a hillside, in muck, deep under water. Controlled by one easily trained man. Gasoline, electric or Diesel power. There's a wide range of sizes and models to meet every requirement.

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Sauerman Slackline Cableway of 1 cu. yd. size pictured above, digs gravel from under water and delivers to screens on top of bins. One man's labor and a moderate expenditure of power moves 65 cu. yd. an hour.

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HOMESTEAD VALVE MANUFACTURING CO.
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OBITUARY

George Gordon Pollock, 64, California engineering construction contractor, died Jan. 15 in Sacramento. A 1905 civil engineering graduate of Purdue University, he participated in the construction of Shasta Dam, and the All American Canal for Boulder Dam, the Alameda Naval Air Base dry docks, the $20,000,000 docks for the naval fleet base at San Pedro, a $3,500,000 cruiser dry dock at Mare Island, a $7,000,000 dry dock development at Pearl Harbor, the $70,000,000 naval operations base at Long Beach and Point Hueneme, and the Tower Bridge which spans the Sacramento River. During World War II, he was president of the Pollock Stockton Shipbuilding Co. which constructed an estimated $80,000,000 worth of naval auxiliary craft. Immediately after the war, he engaged in rehabilitation and repair of naval installations in the Philippines, Guam, and the Hawaiian Islands.

Charles Rex Little, 48, executive secretary of the Ohio Valley Soil Conservation and Flood Control Congress, died in Cincinnati recently. He was a C. E. graduate of Purdue University, 1928. He first joined the Portland Cement Association as a field engineer working on flood control and in 1933 as river and harbor engineer, later becoming regional flood control and conservation engineer. He was a major in the war and in 1946 took up the position he held at the time of his dealth. He was also executive secretary of the Triangle fraternity.

Samuel Boyd Case, 51, manager of the Bowling Green, Ohio, municipal water and light plant, died Jan. 21. For the last five years he conducted numerous surveys to determine an adequate source of water for the city's new $1,500,000 water intake project, to be started this spring.

C. L. Burbank, 54, of Wakefield, Mass., vice-president of Lawrence W. Oakes, Inc., Boston engineers, died Jan. 14. He was a civil engineer and had lived in Wakefield 25 years.

G. A. Anderson, has been named manager of the Hoffman Development Co., Portland, Ore. This firm specializes in designing and building industrial and commercial projects in the Portland area. Mr. Anderson was formerly with the Bramwell Construction Co. in San Francisco and the Del E. Webb Construction Co. in

Emeryville, Calif. He was graduated in civil engineering from the University of California in 1930.

Ernest E. Russell, 66, chief building inspector of Oakland, Calif., for 15 years, died recently. He joined the city building department as a deputy inspector in 1925 and was appointed chief inspector in 1934.

Jerome E. Barieau, 60, who was Placer County road commissioner until his resignation because of ill health last September, died Jan. 2 in Auburn, Calif. Prior to the road commissioner post, he had served as county engineer.

L. E. Smith, 62, assistant San Joaquin Valley Division engineer for the Santa Fe Railway in Fresno, Calif., died recently in Los Angeles. Mr. Smith entered Santa Fe employ as a draftsman in 1910 and remained with the company until his death.

Frederick J. Gorman, Sr. 64, a former research enginer for the Pennsylvania State Highways Department, died Feb. 6 at Merwood, Pa.

Elwin M. Bird, 62, highway commissioner of Winnebago County, Wis., for 20 years, died recently.

Lewis Belton Roof, 62, assistant office engineer with the South Carolina State Highway Dept., died Feb. 2.

George H. Sprehn, 57, highway engineer with the Bureau of Public Roads, died Jan. 28 in Washington, D. C. He received his civil engineering degree from the University of Minnesota in 1924. His employment included engineering work with the Minnesota and Illinois state highway departments, with private engineering concerns in Florida, and since 1935 with the Bureau of Public Roads. He headed the program section Department of Design, at the time of his death.

Edward H. Lawrence, 76, civil engineer who from 1900 to 1906 was in charge of engineering at the Naval Academy in Annapolis, died Feb. 7 in Washington, D. C. A C.E. graduate of the University of Pennsylvania, at one time he worked with Frank Wright on the Imperial Hotel in Tokyo. In World War I he was a design engineer for the Dupont Co. in Wilmington, Del.

Frank E. Marsh, 63, a civil engineer graduate of Iowa State College, died in Kansas City, Mo., Feb. 6. He headed the Marsh Engineering Co. of Des Moines, Ia., and Topeka, Kan.

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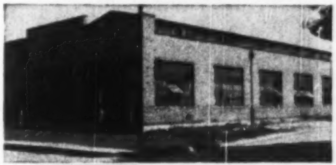

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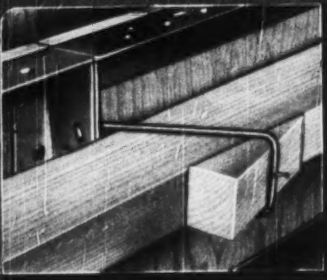

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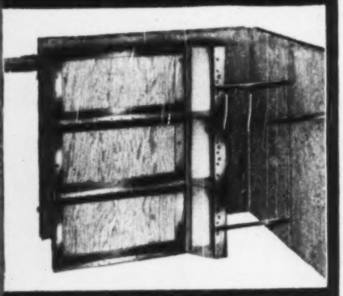

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FORM TIES FORM SYSTEMS FORM CLAMPS SPIROLOCS TWISTYES CONCRETE SPECIALTIES

UNIT PRICES BID BY CONTRACTORS

Master sanitary sewer system, Tampa, Fla.

Continued from ENR 2/2/50 p. 65

TRUNK & INTERCEPTING SEWERS

ITEMS — CONTR. B1		QUANTITY	UNIT PRICES B1(2)*	B1(1)
Add. ear. excav.	cy	1,250	0.50	2.10
Rock excav.	cy	2,000	10.00	7.50
Crushed rock	cy	200	7.00	8.00
Shell	cy	1,500	14.00	3.00
Limest. scr.	cy	200	5.00	4.40
Wood sheeting	Mfbm	10	200.00	80.00
Steel sheeting	lb	5,000	0.10	0.16
Cl. C concr.	cy	10	50.00	25.00
" D "	cy	100	50.00	25.00
Add. st. reinf.	lb	1,000	0.10	0.12
Iron castings	lb	12,500	0.08	0.11
Add. br. masonry	cy	5	70.00	50.00
Manhole bases	ea	5	150.00	93.00
" barrel	lf	30	25.00	16.00
" drops	lf	5	10.00	24.00
Plank fndns.	Mfbm	10	150.00	120.00
Wood piles	lf	300	1.50	3.00
Superstruct.	Mfbm	4	150.00	170.00
Curb replace.	lf	100	1.00	2.00
Concr. curb & gutter repl.	lf	100	3.50	2.70
Concr. sidewalk repl.	sy	100	5.15	5.00
Brick pave.	sy	1,250	3.50	3.50
Asph. concr. pave.	sy	850	2.50	2.75
Shell pave.	sy	350	1.30	1.20
" base	sy	2,750	0.45	1.50
Single surf. treat.	sy	350	0.40	1.00
Double surf. treat.	sy	100	0.55	1.50
Asph. sand seal wear. surf.	sy	300	0.15	0.75
Concr. pave.	sy	10	6.10	7.20
60" RCP sewer a	lf	1,733	45.00	49.00
(sections b	lf	1,849	45.00	43.50
separated c	lf	568	42.00	39.00
according to d	lf	1,139	41.00	42.00
degrees of e	lf	1,433	43.00	38.00
difficulty of work) f	lf	1,179	42.00	42.00
8" VCP sewer	lf	350	3.00	18.00
3" manhole base	ea	23	116.00	332.00
3" manhole bbl.	lf	225	22.00	13.00
Storm sewer cr.	ls		5,496	5,800
Lafayette cross.	ls		21,335	11,220
Cass St. cross.	ls		32,605	20,910
Junct. ch.	ls		1,000	1,298
" "	ls		1,000	1,935
" "	ls		750	1,330

PIPE ITEMS ONLY			C3(1)*	C3(2)
24" VCP sewer a	lf	1,259	9.50	11.25
24" " " b	lf	3,040	9.50	11.25
24" " " c	lf	4,975	9.50	11.25
21" " " a	lf	792	15.00	9.75
21" " " b	lf	922	11.00	9.75
6" VCP house conn.	lf	2,000	1.80	1.50

a, b, c, d, e sections separated according to difficulty of working conditions.

STREET AND ALLEY SEWERS

ITEMS — CONTR. E1		QUANTITY	UNIT PRICES E1(1)	E1(2)
Add. ear. excav.	cy	1,250	0.30	2.20
Rock excav.	cy	100	5.00	11.00
Crushed rock	cy	200	5.84	7.70
Shell	cy	1,250	2.45	3.05
Limest. scr.	cy	200	2.97	6.60
Wood sheeting	Mfbm	10	150.00	100.00
Steel sheeting	lb	5,000	0.175	0.11
Cl. C concr.	cy	10	28.00	65.00
Cl. D "	cy	25	26.50	40.00
Add. st. reinf.	lb	1,000	0.17	0.16
Iron castings	lb	58,200	0.10	0.09
Add. br. masonry	cy	5	67.40	60.00
Manhole bases	ea	133	26.00	44.00
" barrel	lf	880	9.80	16.50
" drops	lf	100	7.10	13.75
Cleanouts	ea	47	23.65	13.75
Plank fndns.	Mfbm	5	151.65	110.00
Pile fndns.	lf	300	2.00	3.85
Superstructure	Mfbm	3	200.00	220.00
Curb replace.	lf	100	2.25	1.65
Concr. curb & gutter repl.	lf	100	4.00	3.10
Concr. sidewalk repl.	sy	150	5.50	4.40
Brick pave.	sy	250	4.25	4.40
Asph. concr. pave.	sy	80	3.10	2.65
Shell pave.	sy	1,400	1.60	2.75
Shell base	sy	3,200	1.75	2.20
Sing. surf. treat.	sy	2,100	0.54	0.90
Doub. surf. treat.	sy	100	0.70	1.10
Asph. sand seal wear. surf.	sy	800	0.20	0.40
Concr. pave.	sy	10	6.70	13.00
VCP sewer —				
8" under 4' deep	lf	10,572	2.55	1.84
8" under 4'-6'	lf	14,080	3.45	2.80
8" under 6'-8'	lf	7,810	4.15	4.40
8" under 8'-10'	lf	5,028	4.85	6.05
8" under 10'-12'	lf	1,374	5.60	7.90
8" over 12'	lf	287	6.65	12.10

		QUAN.	E1(1)	E1(2)
10" under 10'-12'	lf	640	5.55	8.40
10" under 12'-14'	lf	42	7.80	10.60
10" over 14'	lf	268	8.35	14.00
12" under 10'	lf	457	5.65	7.25
12" under 10'-12'	lf	369	6.65	9.05
12" under 12'-14'	lf	536	7.55	10.90
12" over 14'	lf	1,210	9.70	15.40
15" over 8'	lf	256	6.85	7.75
6" house conn.	lf	10,630	1.75	1.25
Riser bases & heads —				
8" sewers	ea	175	10.65	14.50
10" "	ea	20	12.00	15.50
12" "	ea	45	13.00	18.00
15" "	ea	5	19.00	20.00
Riser barrel	lf	1,100	1.00	3.65
8"x6" VC wyes	ea	775	5.00	2.50
Storm sewer cross.	ls		470	60
Culvert on sewer	ls		555	325

CONTR. E4 — SEWER PIPE ITEMS ONLY		QUANTITY	UNIT PRICES E4(1)*	E4(2)
VCP sewer —				
8" under 4' deep	lf	6,528	1.90	2.10
8" over 4' "	lf	4,239	3.75	3.50
10" under 4' "	lf	1,498	2.55	2.50
10" under 4'-6'	lf	1,548	3.90	3.75
10" over 6'	lf	568	4.50	6.50
12" under 6'	lf	420	4.00	4.30
12" under 6'-8'	lf	472	5.00	6.10
12" over 8'	lf	216	6.00	9.00
15" under 6'	lf	1,245	5.00	5.35
15" over 8'	lf	615	6.75	9.50
18" under 6'	lf	738	6.00	7.15
18" over 8'	lf	585	8.50	11.00
21" under 10'	lf	26	11.00	13.00
21" under 10'-12'	lf	300	14.00	15.80
21" over 12'	lf	300	16.50	19.00
24" under 6'	lf	277	9.50	10.00
24" over 6'	lf	145	12.00	15.00
6" house conn.	lf	11,360	1.10	1.45
Riser bases & heads —				
10" sewers	ea	10	15.00	18.00
12" "	ea	15	18.00	20.00
15" "	ea	10	21.00	23.00
18" "	ea	5	30.00	30.00
21" "	ea	10	40.00	40.00
24" "	ea	5	50.00	50.00
Riser barrel	lf	235	5.00	4.10
8"x6" VC wyes	ea	230	4.00	3.00
10"x6" VC wyes	ea	50	5.50	3.50
12"x6" VC wyes	ea	5	9.00	4.50
15"x6" VC wyes	ea	30	15.00	7.00
18"x6" VC wyes	ea	10	22.50	15.00
24"x6" VC wyes	ea	5	40.00	27.00

RIVER & CHANNEL CROSSINGS, 0.6 MI. OF SUBAQUEOUS PIPELINES. $332,853

D1-6(1) Carpenter Constr. Co.,	332,853*
(2) Bay Dredging & Constr. Co., Boice Co., Inc.	———

Six bidders, but bidding too spotty to show fully comparable totals.

ITEMS (SAME ON EACH OF 6 CROSSINGS)		QUANTITY	UNIT PRICES D1-6(1)	D1-6(2)
Add. ea. excav.	cy	100	$ 2.00	$ 0.75
" Cl. C conc.	cy	10	60.00	40.00
" " D "	cy	10	30.00	25.00
" st. reinf.	lb	1000	0.15	0.09
" iron castgs	lb	1000	0.15	0.20
" br. masonry	cy	5	85.00	50.00
Wood piles	lf	100	1.00	1.00
Superst.	MBM	1	300.00	125.00
Plank fndns.	MBM	1	150.00	85.00
Crushed rock	cy	25	8.00	6.65
Shell	cy	50	3.00	3.00
Limest. scrngs.	cy	30	7.00	5.15
Wood sheeting	MBM	.1	100.00	200.00
Steel	lb	1000	0.10	0.10
Rock excav.	cy	—	15.00	20.00
PIPE FOR CROSSINGS				
Perry Ave. River**				
CI pipe	lf	320	211.68	157.86
RC pipe	lf	320	177.91*	No Bid
(let as) 1 @ 20" CIP, 1 @ 36" RCP)				
North Blvd. River**				
CI pipe, 20"	lf	700	81.79*	56.91
No RCP alt.	--	——	——	——
Platt St. River**				
CI pipe	lf	354	184.45	165.19
RC pipe, 48"	lf	354	125.53*	No Bid
Seddon Channel**				
CI pipe, 12"	lf	680	57.98*	58.94
No RCP alt.	—	—	—	—
Garrison Channel**				
CI pipe	lf	452	211.80	197.84
RC pipe, 48"	lf	452	150.81*	No Bid
Sparkman Channel**				
CI pipe	lf	671	173.93	168.09
RC pipe, 48"	lf	671	115.97*	No Bid

*Contract

**Bid as lump sums — worked back to these units for comparative purposes.

Unit prices on pumping and treatment plants will be in a future issue.

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Easton, Pa.

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

Que., St. Felix du Cap Rouge—B.A. 2/28—M. Gilbert, engr., 301 St. Joseph St., Quebec City, watermains, hydrants, well, for Municipality, $45,000.

LOW BIDDERS

La., Gretna—East Jefferson Waterworks Dists., Jefferson Hy. and Arnoult Rd., Feb. 2, water purification plant addn., from Keller Constr. Corp., 7900 Palm St., New Orleans, **$697,000.** CD 1/5.

SEWERS, WASTE DISPOSAL

BIDS ASKED

B. C., Prince Rupert—B.A. 2/27—H. D. Thain, city clk., City Hall, supplying, laying, backfilling approx. 1,880 ft. 42 and 48 in. rein.-con. pipe. $150,000. CD 6/29/44.

CONTRACTS AWARDED

Mass., Lawrence—City, Gordon F. Gaffney, clk., refuse incinerator, to Morse Bouiger Co., 205 E. 42 St., New York, N. Y. **$508,446.** Bids 1/9, awarded 1/31. CD 1/24.

BRIDGES

LOW BIDDERS

Pennsylvania—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg, Feb. 7, substructure of Beaver River Bridge on Western Exten. of Pennsylvania Turnpike, Sec. 29CD, approx. ½ mi. east of Homewood, from point approx. 284 ft. west of the centerline of west track of Pittsburgh & Lake Erie R. R. in Big Beaver Twp. easterly 1,545 ft. to point approx. 478 ft. east of centerline of east track of the Pennsylvania R. R. in North Sewickley Twp., approx. 0.292 mi., Beaver Co., from Dravo Corp., Neville Island, Pittsburgh, **$597,490.** CD 1/20.

STREETS AND ROADS

BIDS ASKED

Calif., Palo Alto—B.A. 3/6—City, City Hall, imprv. streets in California Ave. Dist., Proj. 48-9. Approx. $50,000. Plans deposit $10. Fabian S. Miller, City Hall, city engr.

CONTRACTS AWARDED

▲ **Pennsylvania**—State Hy. and Bridge Auth., Harrisburg, c. conc. paving 33 ft., 46 ft. and variable in width, incl. 4 rein.-con. structures, divided hy. consisting of 22 ft. lanes of c. conc. paving on either side of c. conc. divisor and construct rein.-con. arch and rein.-con. bridge 43,312 ft. L. R. 79 (4), T. R. U. S. 422, from point in city of New Castle to point near the Lawrence-Butler Co. line, Lawrence Co., to V. N. Holderman & Sons, Inc., 297 S. High St., Columbus, O., **$2,223,349.** Bids 1/20, awarded 2/6. CD 1/25, under LB.

▲ **Pennsylvania**—State Hy. and Bridge Auth., 506 N. Office Bldg., Harrisburg, construct divided hy. consisting of rein.-con. pavement 24 ft. and variable in width on each side of variable width concrete and earth divisor area, incl. one encased I-beam highway underpass and one rein.-con. structure, c. conc. pavement 22 ft., 36 ft., 40 ft., 50 ft. and variable in width, incl. one I-beam bridge, wid'n. pavement with c. conc., 20 ft., 30 ft. and variable in width, incl. exten. 2 rein.-con. structures, construct three I-beam bridges and bit. surf. crushed aggregate base, 20 ft. and variable in width, 21,393 ft. L. R. 140 (8-9); 140 Parallel; 417 (1); 53099 (2); 53080 (1), T. R. U. S. 122 and 83, between Pottsville and Cressona, Schuylkill Co., to J. Robert Bazley, Inc., P. O. Box 117, Pottsville, **$2,444,300.** Est. $1,000,000. Bids 1/27, awarded 2/6. CD 1/31, under LB.

▲ **Alta., Edmonton**—City, G. S. Daugherty, clk., paving various streets, to Crown Paving & Constr. Co., Ltd., 140 Ave. and 118 St., Approx. **$1,112,536.** Bids 1/19. CD 1/10.

EARTHWORK, WATERWAYS

BIDS ASKED

† **Illinois**—B.A. 2/28—U. S. Eng., 808 U. S. Court House and Custom House, 1114 Market St., St. Louis 1, Mo., constr. 14,000 lin. ft. earthen levees and double 72 in. and one 30 in. gravity drainage structure in Prairie Du Rocher and vicinity Pro. Item 111-B (Edgar Lakes and Prairie Du Rocher and Modoc Drainage & Levee Dists.), Randolph Co., east bank of Mississippi River opposite approx. miles 122 to 124.8 above mouth of Ohio River, incl. placement 1,035,000 cu. yd. earth, foundation preparation and fertilizing seeding, mulching 82 acres, etc., Inv. CIVENG-23-065-50-78. Extended date. CD 1/16.

LATIN AMERICA

Colombia, Bogota—Government of Colombia, Bogota, awarded contract irrigation works in the Coello River Valley, 15,000 hectares to be irrigated, Tolima Dpt., to Utah Constr. Co., 1 Montgomery St., San Francisco, Calif., U. S. A., Sociedad Industrial de Ingenieria y Construcciones (Sideico) of Bogota, and Olarte, Ospina, Arias y Payan of Bogota. **$4,081,600.**

PUBLIC BUILDINGS

BIDS ASKED

Md., Indian Head—DWELLING UNITS—B.A. 2/28—Pub. Wks. Officer, Potomac River Naval Command, U. S. Naval Gun Factory, Wash. 25, D. C., construct, manage and finance 102 dwelling units, incl. utilities, streets, and walks services and site imprvs., Naval Powder Factory. Extended date. CD 1/5.

▲ **N. Y., Kingston**—SCHOOL—B.A. 3/2—Bd. Educ., Kingston High School, Kingston, school, $1,250,000. Plans deposit $25. Harry Halverson, 280 Wall St., archt. CD 10/9/47.

LOW BIDDERS

▲ **Mass., Chelsea**—HOUSING—City of Chelsea Housing Auth., M. George Tigar, chn., Feb. 1, 130 unit, 2 and 3 story, bsmnt. housing, State Aided Proj. 200-2, Revere Beach Parkway, from G. L. Rugo & Sons, Inc., 80 Boylston St., Boston, **$1,196,171.** CD 12/28.

COMMERCIAL BUILDINGS

BIDS ASKED

Md., Pawtuxent River—DWELLING UNITS—B.A. 2/28—Pub. Wks. Officer, Potomac River Naval Command, U. S. Naval Gun Factory, Wash. 25, D. C., construct, manage and finance 950 dwelling units, incl. facilities, streets, walks, services and site imprvs. at Naval Air Test Center and Naval Air Station. Extended date. CD 1/5.

Va., Quantico—HOUSING—B.A. 2/28—Pub. Wks. Officer, Potomac River Naval Command, U. S. Naval Gun Factory, Wash. 25, D. C., construct, finance and manage, 450 dwelling units, incl. utilities, streets, walks, services and site imprvs. at Marine Corps School. Extended date. CD 1/5.

CONTRACTS AWARDED

Fla., Miami Beach—ATHLETIC CENTER—Community Holding Corp., c/o contractor, athletic center, to Allied Constr. Co., 7317 Collins Ave., Approx. **$500,000.** Bids 12/23. CD 1/5, under LB.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

▲ **Ill., Chicago**—APARTMENT—Oakdale-Sheridan Apartments c/o Philip D. Maher, archt., 157 E. Erie St., Zone 11, 19 story, 294 suites 58x187 ft. apartment, to Turner Constr. Co., 105 W. Adams St., Zone 3, **$1,600,000.** CD 9/8.

Ill., Chicago—STORE—J. C. Penney Co., Inc., 112 Place and Michigan Ave., Zone 28, 80x116 ft., brick, concrete, steel store, to Sumner S. Sollitt & Co., 307 N. Michigan St., Zone 1, **$500,000.** Bids 12/19, awarded 2/1. CD 11/30.

Md., Elkton—RESIDENTIAL SITE IMPRVS.—Lewis & Minster (Developers), 112 E. Main St., residential development site imprvs., incl. ½ mi. c.i. water mains and ½ mi. terra cotta sewer lines, road paving, east end of town, to Wm. H. Fox 123 Singerly Rd. Total est. **$500,000.**

▲ **Miss., Natchez**—HOUSING—Adams Co. Homes for Veterans, c/o contractor, 200 houses, to Crawford Corp., 2019 N. Third St., Baton Rouge, approx. **$1,000,000.**

▲ **Pa., Ardmore**—RESIDENCES—Peartree & Pasfield, 33 E. Wynnewood Rd., Wynnewood, residential development, Penn Valley sect., separate contracts. **$1,400,000.** H. Barrett Pennell, 33 E. Wynnewood Rd., Wynnewood, archt.

▲ **Pa., Norristown**—SHOPPING CENTER, etc.—Joseph Butera, 40 DeKalb St., shopping center, apartments and residential development, Markley and Juniper Sts., separate contracts. **$2,750,000.**

INDUSTRIAL BUILDINGS

BIDS ASKED

▲ **Tex., Snyder**—GASOLINE PLANT—Bids Asked—Barnsdall Oil Co., Neil Esperson Bldg., Houston, gasoline plant. **$2,250,000.** CD 2/6.

SOON LETS CONTRACT

La., New Orleans—PLANT—Falstaff Brewing Corp., c/o Robert W. Layer & Philip P. Cazale, archts., 8 Marlborough Gate, soon lets contract bottling plant addn. Approx. **$100,000.** CD 10/16/45.

Mass., Watertown—WAREHOUSE—Quincy Market Cold Storage & Warehouse Co., 178 Atlantic Ave., Boston, soon lets contract 1 story, 150x200 ft., bsmnt., rein.-con. warehouse addn. and cold storage facilities, Stanley Ave. **$125,000.**

LOW BIDDERS

Tex., Houston—AUTO SERVICE, SALES, etc.—Rosenstock Motors, Inc., 1120 McKinney Ave., Feb. 3, steel, brick, hollow tile auto service, sales, parts, concrete pier and beam fdn., from Benson Co., 1921 Westheimer Rd. **$296,000.** CD 1/23.

CONTRACTS AWARDED

Ga., Jackson—MILL—Pepperton Cotton Mills, Jackson, cotton mill addn., to Triangle Constr. Co., Greenville, S. C. Approx. **$75,000.** Bids 2/3. CD 1/25.

▲ **N. J., Merchantville**—PLANT—Kieckhefer Container Co., 130 N. Broadway, Camden, 1 story, 140,000 sq. ft., face and block mfg. plant, to Charles F. Rohleder, 600 Schuylkill Ave., Phila., Pa. **$1,000,000.** Bids 1/27. CD 1/25.

N. C., Burlington—PLANT—Burlington Mills Corp., Burlington, expansion weaving sect. of Ossipee Plant, to H. D. Barnes, Inc., 233½ N. Greene St., Greensboro. **$123,507.**

Tenn., Memphis—PLANT—Southern States Co., c/o Hanker & Heyer, archts., Commerce Title Bldg., roofing mfg. plant, to Tri-State Constr. Co., Three Sisters Bldg. Approx. **$135,000.**

Tex., Dallas—SUB-STATION—Dallas Power & Light Co., Dallas Power and Light Bldg., Cedar Crese sub-station enlargement, (3rd transformer), force account. Approx. **$156,500.** CD 2/3/49.

▲ **Tex., Freeport**—AMMONIA PLANT—Dow Chemical Co., Freeport, ammonia plant to Austin Co., M & M Bldg., Houston. Approx. **$4,500,000.** Bids 1/26, awarded 2/3. CD 1/18.

Tex., Yorktown—PLANT—Yorktown Cotton Oil & Mfg. Co., Yorktown, peanut (oil and products) mfg. plant, to W. G. Biddle, Beeville. Approx. **$69,000.**

UNCLASSIFIED

CONTRACTS AWARDED

Ark., Berryville—DRIVE-IN THEATER—Missouri-Kansas Drive-In, Inc., Chet Borg, mgr., Berryville, 200-car drive-in motion picture theatre, between Berryville and Green Forest on U. S. Hy. 62, separate contracts, **$60,000.**

▲ **Illinois**—CRUDE OIL PIPE LINE—Texas-Empire Pipe Line Co., M & M Bldg., Houston, Tex., 42½ mi. 16 in. welded joint crude oil pipe line carrier from near Wilmington to 5 mi. east of Chicago, to O. R. Burden Constr. Co., Tulsa, Okla., Approx. **$1,050,000.**

Miss., Vicksburg—MOTOR COURT—Magnolia Hotel Co., c/o contractor, motor court, to Webster Constr. Co.,

Continued on page 76

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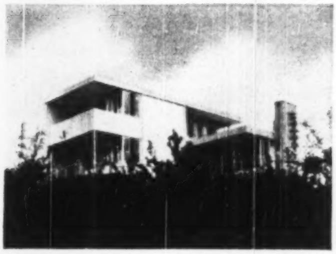
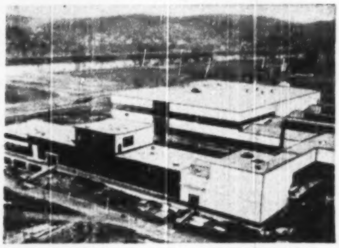


Modern residence at Berkeley, California. Architect: Richard J. Neutra.



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Continued from page 74

Threefoot Bldg., Meridian, **$125,000.** Bids 1/12. CD 1/19, under LB.

Tex., College Station—ATHLETIC GROUNDS IMPRVS., etc.—Agricultural & Mechanical College of Texas, College Station, athletic grounds drainage, grading, lighting sys., own forces. Approx. **$60,000.** Carleton W. Adams, c/o owner, archt. Arch. G. Baker, c/o owner, maintenance archt.

▲ **N. S., North Sydney**—DOCK, etc.—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., enlargement dock and terminal facilities, to T. C. Gorman (Nova Scotia) Ltd., 123 Roy Bldg., Halifax **$1,177,777.** Bids 2/1. CD 2/7, under LB.

PROPOSED PROJECTS

WATER SUPPLY

Idaho, Pocatello—City, City Hall, two 1 m. g. reservoirs, **$70,000 each.** W. Wilson, city engr.

Minn., East Grand Forks—City, A. G. Rand, clk., WW. imprvs., incl. 1 m.g. concrete underground storage tank, addnl. filter, addnl. intake pump and several higher capacity pumps. **$150,000.** Lium & Burdick, Grand Forks, N. D., consult. engrs. CD 11/19/46.

Neb., Lincoln—City, City Hall, 18 and Farnam Sts., furnish, install pumping equip. at Ashland with some building work, **$30,000;** booster and water distr. station at Havelock, suburb of Lincoln, **$400,000.** D. L. Erickson, c/o owner, city engr. CD 10/8/47.

N. Y., Cicero—Town, water supply sys. for Cicero-Oneida Lake Water Dst. Approx. **$275,000.** CD 2/26/47.

N. C., Conway—Town, complete water sys., 4½ mi. distr. mains, elevated tank and well. J. Newton Farlow, Raleigh Bldg., Raleigh, consult. engr.

▲ **O., Cleveland**—City, City Hall, 6 and Lakeside Sts., watermain Lakeland Blvd. from E. 222 St. to Lloyd Rd., **$650,000;** watermain from Nottingham pump. station to Mayfield Rd., **$2,100,000;** 2 m.g. steel water reservoir, Salon Rd. and Erie R.R., **$246,000.** Frank J. Schwemler, Auditorium Bldg., engr. CD 12/10/43.

Okla., Ardmore—City, bond election Mar. 7, watermain exters., **$225,000;** 20 in. water line from Woodford Lake to Ardmore, **$285,000.** Sam Mathews, Ardmore, engr.

Ore., Portland—Palatine Hill Water Dist., 625 Cascade Bldg., voted **$287,000** bonds, water sys., incl. 2 reservoirs, pump. station, and pipe lines. John W. Cunningham, Spalding Bldg., consult. engr.

Wash., Tacoma—City, City Hall, supply system for Northeast Tacoma, with pump station, 500,000 gal. concrete reservoir, discharge and spillway pipes, etc., **$300,000;** replacing final section Green River gravity supply line with 6,800 ft. 72 in. steel pipe, **$400,000;** replacing several sections 60 in. cresoil wood stave pipe at McMillin Reservoir, **$68,000;** replacing 2,940 ft. defective McMillin spillway line, **$100,000.** W. A. Kunkg, water supt. CD 8/2/45.

Alaska, Petersburg—City, City Hall, water storage dam. **$160,000.** F. Toner, Juneau, consult. engr. CD 7/30/45.

N. B., Atholville—Municipality, WW sys. **$150,000.**

SEWERS, WASTE DISPOSAL

Conn., New London—City, City Manager, Municipal Bldg., sewers, incl. elimination cutfall sewers, State Farnsworth and Eight Sts. **$550,000.** CD 8/29/46.

▲ **Ill., Granite City, Madison and Venice**—East Side Levee & Sanitary Dist., Dan Foley, pres., 2642 McCasland Ave., East St. Louis, system of trunk line sewers and pump. station in Tri Cities area of the district. **$7,000,000.** Horner & Shifrin, Shell Bldg., 1221 Locust St., St. Louis 3, Mo., consult. engrs. Stephan Kernan, c/o owner, ch. engr.

Ia., Waterloo—City, City Hall, sewage plant expansion. **$100,000.** Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs. CD 11/17/44.

Ky., Cynthiana—City, plans by J. S. Watkins, 145 E. High St., Lexington, sewage treatment plant, incl. primary basin, and filter, offices, head house. **$135,339.** CD 10/22/45.

Mass., Fairhaven—Town, G. Winston Valentine, chn. Sewer Comn., Town Hall, sewerage sys., incl. sewage disposal pump. station, sewer lines, equipment. **$500,000.** Fay, Spofford & Thorndike, 11 Beacon St., Boston, consult. engrs.

Mo., Berkeley City (St. Louis 21, P. O.)—City, Edw. A. Walsh, mayor, City Hall, Airport Rd. and Helen Ave. **$613,000** bond election Apr. 4, trunk and lateral sewers, 2 disposal plants with auxiliaries, appurtenances. Russell & Axon, 408 Olive St., St. Louis, Zone 2, engrs. CD 6/23/47.

Neb., Central City—City, City Hall, sewage plant. **$115,000.** Fulton & Cramer, Trust Bldg., Lincoln, consult. engrs.

▲ **O., Cleveland**—City, City Hall, Lakeside and 6 Sts., sewage disposal plant, E. 71 St. and Independence Rd., incl. one overflow chamber and spillway conduit, **$3,000,000.** Havens & Emerson, Leader Bldg., consult. engrs.; low level sewer along Cuyahoga River, **$722,000;** relief sewer in Pratt Ave., **$180,000.** J. C. Wenrick, c/o owner, city engr. CD 11/21.

O., Shaker Heights—City, sewer imprvs. in several streets. **$300,000.** Pease Eng. Co., 2063 E. 4 St., Cleveland, consult. engr. CD 11/22/48.

Okla., Ardmore—City, bond election Mar. 7, sewage disposal plant, **$200,000;** sanitary sewer lines, **$100,000.** Sam Mathews, Ardmore, engr.

Pa., Abington—Comrs. Abington Twp., Abington, pump. stations, force mains, intercepting sewers. **$500,000.** Albright & Friel, Inc., 121 S. Broad St., Phila., consult. engr.

S. C., Sumter—City, City Hall, sewage disposal plant, sanitary sewer imprvs. **$350,000.** Palmer & Malone, Sumter, consult. engrs.

S. D., Rapid City—City, J. Mac Vigar, mgr., sewage plant expans. **$106,000.** Claud Banhs, city engr. CD 10/15/47.

Tex., Harlingen—City, voted bonds, storm sewers, drainage, **$110,000;** sanitary sewer lines, **$470,000;** sewage disposal or treatment plant, **$200,000.** J. R. Brule, c/o owner, city engr. CD 1/12.

Alaska, Fairbanks—City, City Hall, Denali sewers, **$30,000;** Block 46 **$100,000;** N. Cushman St., **$85,000;** street drainage, **$350,000;** rehabilitation sewers, **$150,000.** CD 7/13/45.

N. B., Atholville—Municipality, sewerage sys. **$175,000.**

N. S., Dartmouth—Municipality, pump. station at Lamont Lake, **$49,600;** 14,100 ft. 24 in. c.i. pipe from reservoir to town, **$466,900;** 4,050 ft. 16 in. c.i. pipe within town, **$84,700.** John R. Kaye, c/o town engr.

Que., Hull—City, H. Leblanc, clk., municipal incinerator. Approx. **$150,000.** J. P. Carriere, c/o owner, engr.

BRIDGES

Colorado—State Hy. Dpt., **Denver,**

Adams Co.—0.1 mi. bridge, approaches, east of Watkins, F 005-4(1), **$95,000.**

Boulder and Adams Counties—0.3 mi. wid'n., bridge Longmont-Denver, F 004-1(120), **$180,000.**

Jefferson Co.—0.1 mi. bridge, Golden-West, F 005-3 (6), **$160,000.**

Mesa Co.—0.3 mi. bridge, approaches Gunnison-North S0119(7), **$80,000.**

Weld Co.—0.2 mi. bridge, approaches west of Greeley F 007-1 (2), **$50,000.**

1 mi. bridge, approaches north of Rockport, F 006-1(3), **$170,000.** Mark U. Watrous, state hy. engr.

▲ **Alabama**—State Hy. Dpt., Montgomery,

Clarke Co.—bridge over Tombigee River, Coffeeville, **$1,200,000.**

Etowah and Chilton Counties—bridge over Coosa River from Gadsden to Verbena, **$500,000.**

Etowah Co.—bridge over Coosa River at Gadsden **$2,000,000.**

Jefferson Co.—Dauphin Island Bridge **$2,100,000.**

Mobile Co.—bridge over Fowl River on Cedar Point Rd. south of Mobile, **$300,000.**

Colorado—State Hy. Dpt., Denver,

Lincoln Co.—bridge 0.1 mi. Rush Creek on S. H. 94, S 0020 (2), **$60,000.**

Otero and Crowley Counties—bridge 0.1 mi. Monzanola—Crowley, S 0175 (1), **$60,000.**

Saguache Co.—bridge, approaches 0.5 mi. south of Parlin, S 0124 (2), **$100,000.** Mark U. Watrous, state hy. engr.

Idaho, Lewiston—City, City Hall, approaches to Clearwater River Memorial Bridge, **$300,000.** W. P. Hughes, city engr.

Ill., Chicago—City, City Hall, Zone 2, temporary fixed bridge over Little Calumet River, Indiana Ave. between 134 and 135 Sts. **$400,000.** J. F. Ward, Dpt. P. Wks., purch. agt.

Ill., Chicago—City, City Hall, Zone 2, viaduct on N. Michigan Ave. between Chicago River and Grand Ave. reconstruction **$400,000.** Arthur Engh, Bureau of Imprvts., City of Chicago, 139 N. Clark St., engr.

Pennsylvania—General State Auth., 18 and Herr Sts., Harrisburg,

Bedford Co.—construct 2 access hy. bridges to Shawnee State Park. **$156,800.** Wheelwright, Stevenson & Laughran, 225 S. 15 St., Phila., consult. engrs. A. F. Jones, c/o owner, ch. engr.

▲ **Tex., Houston**—Harris Co., Courthouse, voted bonds, underpass or overpass at intersection sect. of Liberty Rd. and Lockwood Dr., **$500,000,** H. Zapp, co. engr.; concrete, steel vehicle bridge across San Jacinto River, **$850,000,** Howe & Wise, 4119 San Jacinto St., consult. engrs. CD 1/6.

▲ **Washington**—State Toll Bridge Auth., Oympia,

King Co.—concrete pontoon bridge across Lake Washington between Madison Park in Seattle and Evergreen Point, Seattle. **$8,500,000.** W. A. Bugge, state hy. dir. CD 2/20.

STREETS AND ROADS

▲ **Colorado**—State Hy. Dpt., **Denver,**

Conejos Co.—surf., oiling 1.5 mi. Antonito-West, S-0111 (1) **$100,000.**

Douglas Co.—grading, surf. 3 mi. Castle Rock-Franktown, SP 47-86-503, **$60,000.**

surf. 1.4 mi. Castle Rock-East S 0041 (1) **$70,000.**

Eagle Co.—oil proj. 6.7 mi. Dowd-Wolcott, F 001-2 (4), **$60,000.**

Elbert Co.—grading, surf. 2 mi. Kiowa-East, S. P. 34-86-504, **$50,000.**

surf. 4 mi. Kiowa-Elizabeth, S 0028 (2), **$72,000.**

Kiowa and Prowers Counties—surf., oiling 2.9 mi. Lamar-North, S 0006 (2) **$50,000.**

surf., oiling 3 mi. Granada-North S 0001 (6), **$50,000.**

Larimer Co.—surf. 4 mi. Wellington-North, Colo. State Proj. FI-002-1 (6), **$445,000.**

Las Animas Co.—surf. 1 mi. Trinidad-South, UI-002-3(3), **$200,552.**

Logan Co.—surf., oiling 7.6 mi. Sterling-West, S-0024 (2) **$72,000.**

Mesa Co.—surf. 3.4 mi. Grand Junction-Redlands, S-0143(1), **$200,000.**

surf. 3 mi. F 001-1 (1) Grand Junction-Pallisade, **$200,000.**

Mineral and Rio Grande Counties—grading, surf. 6 mi. Greede-So. Fork, SP (23-62) 149-502, **$150,000.**

Otero Co.—surf., oiling 5.8 mi. LaJunta-Cheraw, S 0017 (1), **$60,000.**

Prowers Co.—surf., oiling 5 mi. Holly-South S 0003 (2), **$150,000.**

Rio Blanka Co.—surf. 13.1 mi. Meeker-Rangely, S 0144 (7), **$383,000.**

Routt Co.—oiling 4.3 mi. Steamboat Springs-Mt. Harris, Colo. Proj. F 005-2 (7), **$51,000.**

surf. 1.3 mi. Mt. Harris-East, Colo. State Proj. F 005-2, (5), **$85,000.**

oiling 5.1 mi. Haybro-North and South, S-0121(10), **$50,000.**

Washington Co.—surf., oiling 2.8 mi. Akron-South, S 0015 (1), **$50,000.**

Weld Co.—surf., oiling 9 mi. Barnsville-West, S 0034 (1), **$200,000.**

Yuma Co.—oiling 91 mi. Wray-East, F 011-1 (3), **$91,000.** Mark U. Watrous, state hy. engr.

▲ **Colorado**—State Hy. Dpt., Denver

Adams and Arapahoe Counties—pavement wid'n. 1 mi. Denver-East, F 005-4 (2) **$100,000.**

Adams and Boulder Counties—shoulder oiling 18 mi. Denver-Lafayette, F 004-1 (13), **$110,000.**

Adams and Weld Counties—stabilizing, oiling 40 mi. Denver-Wiggins Junction FI 003-1 (2), **$250,000.**

Adams Co.—grading, structures 2.3 mi. Denver North FI-FGI-002-1 (3), **$550,000.**

Arapahoe and Denver Counties—grading 12.8 mi. Denver-Castle Rock, FI 002-2 (11) **$850,000.**

Arapahoe Co.—grading 6.2 mi. Denver-Castle Rock, FI 002-2 (10), **$450,000.**

Archuleta Co.—surf., oiling 7.8 mi. Pajosa Springs, Bayeld, F 022-2 (3), **$122,000.**

Cheyenne and Kit Carson Counties—surf., oiling 4 mi. Cheyenne Wells-Burlington S 0001 (5), **$60,000.**

Cheyenne and Lincoln Counties—oiling, seal coat 4.2 mi. Cheyenne-Wells-Limon SPO (33-46) 8-513, **$50,400.**

Corson Co.—stabilizing, oiling 14 mi. Seibert-Ariba, FI 005-5 (1), **$90,000.**

Delta Co.—surf., oiling 4 mi. Delta-East, S 0125 (3), **$90,000.**

Denver Co.—right-of-way grading, structures 0.5 mi. Denver, UI 002-2 (8), #2 Valley Hy., **$600,000.**

right-of-way grading, surf. 0.8 mi. Denver UI-002-2 (8) #1, Valley Dr., **$500,000.**

paving 2. 5 mi. Valley Hy., Denver, UI 002-2 (14), **$150,000.**

sheet piling right-of-way Denver, UI 002-2, **$388,695.**

Eagle Co.—stabilizing, oiling 2 mi. Wolcott-West, F 001-2 (5), **$50,000.**

Elbert and Arapahoe Counties—stabilizing, oiling 25 mi. Agate-Denver, FI 0054 (3), **$160,000.**

Elbert Co.—grading, surf., oiling 9 mi. Franktown-Kiowa, S 002 (3), **$170,000.**

El Paso Co.—pavement wid'n., bridges 2 mi. Pueblo-North, FI 002-2 (13), **$235,986.**

stabilizing, oiling 4 mi. Colorado Springs, Ute Pass, FI 002-2 (12), **$100,000.**

Fremont Co.—grading, surf. 5.1 mi. Florence-Penrose, S 0059 (1), **$300,000.**

Garfield Co.—surf., oiling 6.3 mi. Rifle-North, F 018-1 (5), **$55,000.**

stabilizing, oiling 5 mi. Rio Blanco-South, F 018-1 (6), **$100,000.**

Jackson Co.—grading, surf. 4 mi. Walden-Muddy Pass, S 0115 (3), **$156,000.**

Jefferson Co.—grading, structures 4.1 mi. Golden East and West, F 005-3 (5), **$700,000.**

surf. 4.5 mi. Conifer, East and West, F 016-1 (2), **$385,000.**

La Plata Co.—grading, surf. 2.5 mi. Ignacio-Durango, S 0154 (2), **$100,000.**

surf. 5 mi. Durango-Hesperus, F 022-1 (4), **$400,000.**

Larimer Co.—surf., oiling 9 mi. Ft. Collins-Ault, S 0024 (3), **$239,068.**

grading, surf. 3 mi. Ft. Collins-West Powder Canon, S 0104 (3), **$100,000.**

surf., oiling 7.8 mi. Wellington-South, FI 002-1 (4), **$75,000.**

oiling, seal coat 39 mi. Ft. Collins North, SPO 6-123-511, **$58,500.**

Las Animas Co.—grading, structures 1.5 mi. Trinidad-South, EI 002-3 (5), **$150,000.**

Logan Co.—stabilizing, oiling 19 mi. Sterling-Peetz, Neb. State Line, F 009-1 (1), **$130,000.**

Mesa and Delta Counties—stabilizing, oiling 10 mi. Grand Junction-Montrose, F 019-1 (3), **$160,000.**

Mesa Co.—grading, surf. 3 mi. Grand Junction-Redlands, S 0143 (3), **$170,000.**

oiling 7 mi. Grand Junction-Redlands, S 0143 (4), **$70,000.**

Mineral Co.—surf., oiling 17.2 mi. Wold Creek Pass, F 022-2 (2), **$325,000.**

Moffat Co.—stabilizing, oiling 7 mi. Craig-Maybelle, F 005-1 (1), **$50,000.**

Montezuma Co.—grading, surf. 4 mi. Dolores-Cortez, S 0153 (4), **$130,000.**

oiling 8.4 mi. Dolores-Cortez, S 0154 (5), **$70,000.**

Montrose Co.—stabilizing, oiling 12 mi. Natvista-Norwood, F 020-1 (2), **$250,000.**

Prowers and Kiowa Counties—stabilizing, oiling 18 mi. Wiley Junction-North, F 028-1 (1), **$220,000.**

Pueblo Co.—pavement 1.8 mi. Pueblo-North, FI 002-2 (9) and F 001-3 (8), **$130,000.**

pavement 1.3 mi. Pueblo-North, UI 002-3 (4), **$144,000.**

Rio Blanco Co.—grading, surf. 6 mi. Rangeley-Meeker, S 0144 (8), **$300,000.**

oiling 19 mi. Rangeley-Meeker, S 0144 (9), **$225,000.**

Routt Co.—surf., grading 10 mi. Oak Creek-Toponas, S 0121 (9), **$100,000.**

surf., oiling 8 mi. Steamboat Springs South, F 005-2 (6), **$350,000.**

San Miguel Co.—grading, surf. 2 mi. Placerville-Telluride, E 0150 (2), **$60,000.**

Weld Co.—oiling seal coat 31 mi. Ault-North, SPO 3-3-511, **$62,000.**

Yuma Co.—surf., oiling 4 mi. Wray-North, S 0001 (8), **$100,000.** Mark U. Watrous, state hy. engr.

▲ **Colorado**—State Hy. Dpt., Denver,

Adams Co.—grading, surf. 10 mi. Bromley Lane-East, S 0172 (1), **$176,000.**

Archuleta Co.—grading, surf. 4 mi. Arboles-Westerly, S 0154 (3), **$100,000.**

Baca Co.—grading, surf. 6 mi. Springfield-Pritchett, S 0002 (7), **$100,000.**

Boulder and Weld Counties—grading, surf., oiling 5 mi. Longmont-East, S 0072 (1), **$70,000.**

Boulder Co.—grading, surf., oiling 3 mi. Marshall-El Dorado Springs, S 0014 (1), **$100,000.**

Costea Co.—grading, surf., oiling 3 mi. San Luis S 0116 (1), **$50,000.**

Grand Co.—grading, surf. 3.5 mi. south of Kremling, S 0107 (3), **$80,000.**

Huerfano Co.—grading, surf. 3 mi. LaVeta-North S 0079 (1), **$50,000.**

Jefferson Co.—grading, surf. 2 mi. Evergreen-O'Brien Gulch, S 0098 (1), **$100,000.**

grading, surf., oiling 7 mi. Arvoda-Rollinsville, S 0086 (2), **$200,000.**

Kit Carson Co.—surf., oiling 4 mi. Cheyenne Wells-Burlington, S 0001 (9), **$100,000.**

Lake Co.—oiling 5 mi. Twin Lakes-East, S 0130 (1), **$50,000.**

Larimer Co.—grading, surf. 2.5 mi. Loveland-Southeast, S 0080 (1), **$60,000.**

grading, surf. 3 mi. Ft. Collins-East S 0160 (1), **$60,000.**

Las Animas Co—surf., oiling 8 mi. Weston-Monument Lakes, S 0036 (1), **$130,000.**

grading, surf. 5 mi. Bechoor Junction-East S 0002 (6), **$90,000.**

Lincoln Co.—grading, surf. oiling 3 mi. Limon-South S 0027 (1), **$60,000.**

Logan Co.—grading surf., oiling 7.6 mi. Sterling-West S 0024 (2), **$50,000.**

Montrose Co.—grading, surf. 5 mi. Natvista-Uravan S 014 (2), **$100,000.**

Otero, Kiowa and Crowley Counties—oiling 18 mi. Sugar City-Haswell S 0016 (3), **$80,000.**

Otero Co.—grading, surf., oiling 5.8 mi. LaJunta-Cheraw S 0017 (1), **$72,000.**

grading, surf. 3 mi. Hawley-South S 0023 (5), **$56,000.**

Rio Grande Co.—grading, surf., oiling 2 mi. Monte Vista-South S 0113 (4), **$60,000.**

Seguache Co.—grading, surf., oiling 12 mi. Moffatt-Mineral Hot Springs, S 0099 (3), **$320,000.**

Weld Co.—surf., oiling 6 mi. Hudson-East S 0030 (2), **$115,000.**

surf., oiling 6 mi. Briggsdale-New Rayner S 0021 (4), **$115,000.**

Yuma Co.—surf., oiling 5 mi. North of Yuma, S 0007 (1), **$100,000.** Mark U. Watrous, state hy. engr.

Connecticut—State, G. Albert Hill, hy. comr., Hartford,

Georgetown—hy. to connect Rt. 7 and Rt. 53 from Smith St. to Riverside Rd. to Main St. **$275,000.** R. E. Jorgenson, State Office Bldg., state hy. engr.

Neb., Omaha—Doublas Co., Omaha, imprv. county mail route roads. **$410,000.**

Okla., Pawhuska—City, wid'n. 11 blocks Main St. **$100,000.**

S D., Brookings—City, paving, curbing, gading, guttering, **$150,000.** H. M. Pierce, 422½ Main St., Aberdeen, consult. engr.

Tex., Harlingen—City voted bonds, street and alley constr., paving. **$180,000.** J. R. Bruie, c/o owner, engr. CD 1/12.

Que., Verdun—Municipality, macad. paving **$160,000**; resurf. streets, **$63,000.** H. Hadley, City Hall, city engr.

EARTHWORK, WATERWAYS

Massachusetts—Commonwealth of Mass., Dpt P Wks., 100 Nashua St., Boston, shore imprv., along recreational beaches, Woodbury's Point, Lynn, to Nahant Beach, in Nahant, Lynn and Swampscott. **$500,000.**

† **Oregon**—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., 66 houses at McNary Lock and Dam, McNary, **$650,000.**

Pennsylvania—General State Auth., 18 and Herr Sts., Harrisburg, lake excavation work, earth moving before completion of dam providing regulated depths of water, construct artificial islands Shawnee State Park, Bedford Co., **$206,000.** Wheelwright, Stevenson & Laughran, 225 S. 15 St., Phila., consult. engrs. A. F. Jones, c/o owner, ch. engr.

AIRPORTS

Conn., Bridgeport—AIRPORT—City, Mayor Jasper McLevy, City Hall, municipal airport, inck resurf. runways, harrowing, rerolling, 50 ft. runway safety bands, grassing certain areas, resealing taxiways and ramps, repairing dips and rough spots turning areas, Stratford. **$300,000.** Seelye-Stevenson & Value, 101 Park Ave., New York, 17, N. Y., consult engrs. CD 10/10/45.

▲† **D. C., Wash.**—AIRPORT—Civil Aeronautics Admin., 14 St. between E and Constitution Ave. N.W., airport, incl. 10,000 ft. runway and possibly a hotel at or near here. **$14,000,000.**

Ind., Valparaiso—AIRPORT—Porter Co. Airport Comrs., Court House, two 50x1800 ft. paved concrete runways, one 50x1,800 ft. paved bit. surf. runway, 2,500 sq. ft. terminal bldg., parking area, Porter Co. Airport, U. S. No. 30 (Lincoln Hy.), ½ mi. east of here. Clyde Williams, South Bend, and Millan Morgan, 115-9 St., Chesterton, consult. engrs. CD 4/8/48.

†**Okla., Tulsa**—MOTOR MAINTENANCE, etc.—Air Guard, c/o Lt. Col. Joseph W. Turner, Comm. and U. S. Eng. Office, Box 61, air national guard motor maintenance and storage pool, quartermaster supply bldg. **$225,000.**

Tenn., Nashville—WAREHOUSE—Tennessee National Guard, c/o Steinbaugh & Wheeler, archts., Presbyterian Bldg., warehouse at Berry Field. **$144,000.**

Tex., Amarillo—TERMINAL—City, Gene Klein, mayor, Amarillo, terminal at north end of airfield. **$390,000.** CD 10/2/47.

Alaska, Seldovia—AIRFIELD—Alaska Aeronautics & Communications Comn., Juneau, airfield with 2,400 ft. runway. **$100,000.**

AMERICANS ABROAD

▲ **Greece, Athens**—Government of Greece, Economic Cooperation Admin., Athens, plans hydro-electric proj. at Vodas, **$24,120,000**; hydro-electric proj. at Louros, **$6,300,000.** Ebasco Services, Inc., 2 Rector St., New York, N. Y., U. S. A., engr.

LATIN AMERICA

B. W. I., **Georgetown**—Administration of Grand Cayman, Georgetown, plans hotel on West Bay beach, **$1,000,000**; processing plant and turtle cannery, Grand Cayman Island. Colonial Development Corp., London, England, engr.

Jamaica, Manderville—Jamaica Bauxites Ltd., Manderville, plans refinery for production of aluminum and laying railway spurline to Old Harbour on the island's south coast where a dock will be built, accomodating freighters. **$3,500,000.**

Mexico, Azcapotzalco—Artefactos Plasticos, S.A., Prolongacion de Chopo, 578, Azcapotzalco, D.F., plans plastic toys factory. **$300,000.**

Mexico, Matamoros—Republic of Mexico, Mexico City, plans paving highway from Metamoros to Washington Beach (37 kilometers). **$693,600.** Ministry of Works, Mexico City, engr.

Mexico, Matamoros—Republic of Mexico, Petroleos Mexicanos S/A, Mexico City, plans shipyard, storage tanks and docks. **$500,000.**

Mexico, Mexico, City—Departamento del Districo Federal (Muncipal Gov.), Palacio Municipal, Mexico, D. F., plans women's prison. **$500,000.**

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Mexico, Mexico City—Transformadores y Reactores de Mexico, S. A., Concepcion Mendez, 15, Mexico, D. F., Mexico, plans electric transformers factory. **$400,000.**

Mexico, Toluca—Mexico State Govt., Palacio del Estado, State of Mexico, plans 300-bed hospital. **$500,000.**

Mexico, Tuxpan—Mexican Govt., Sria. de la Marina, Mexico, D. F., plans port works, featuring breakwaters, wharves and warehouses. **$4,250,000.**

PUBLIC BUILDINGS

▲ **Ariz., Phoenix**—HOUSING—Maricopa County Housing Auth., First Ave. and and Washington St., 550 low-rent housing units, **$3,000,000.**

† **Calif., Bell**—POST OFFICE—General Services Admin. 18 and F Sts. N. W., Wash. 25, D. C., post office, etc. exten. remodeling **$340,000.**

Calif., Ceres—SCHOOL—Ceres High School Dist., Ceres, $300,000 bond election Mar. 2, high school bldgs. Approx. **$250,000.** Russel Guerne de Lappe, Claremont Hotel, Berkeley, archt.

Calif., Escondido—SCHOOL—Escondido Union School Dist., voted bonds, school and existing school addns., **$300,000.** Lee B. Kline, 1741 Silverlake Blvd., Los Angeles, archt. CD 9/30.

Calif., Long Beach — PHYSICAL EDUCATION — City School Dist., 715 Locust Ave., plans by Hugh R. Davies, Security Bldg., physical education bldgs. and swimming pool at Polytechnic High School, Approx. **$250,000.** CD 11/18/48.

Calif., Los Angeles—SCHOOL—Bd. Educ., 1425 S. San Pedro St., plans by Stiles Clements, 210 W. 7 St., 2 story, 63x236 ft., classroom bldg at Thomas Jefferson High School, **$315,000.**

Calif., Los Angeles—BOILER PLANT—Bd. Regents University of California, 405 Hilgard Ave., plans by Spencer & Landon, 1724 Hilhurst Ave. boiler plant, **$140,000.** CD 3/24.

▲ **Calif., Lynwood**—SCHOOLS—Lynwood Elementary and High School Dists., voted bonds school, **$300,000;** high school, **$800,000.**

Calif., Merced — HOUSING — Merced County Housing Auth., Courthouse, plans by Robert R. Jones, Ocean and Mission Sts., Carmel, 150 housing units, Approx. **$250,000.**

Calif., Monrovia—CITY HALL, etc.—City plans by William Ainley, 999 E. Wildrose Ave., 26,000 sq. ft., rein.-con. city hall and library. **$250,000.**

Calif., San Francisco—INFIRMARY—Dpt. P. Wks., City Hall, plans by Dodge Riedy, city archt., City Hall, rehabilitating old infirmary at Laguna Honda Home. **$250,000.** CD 12/13/48.

Calif., San Francisco—WAREHOUSE, etc.—Bd. Regents University of California, Berkeley, plans by Kent & Haas, 525 Market St., 3 story, rein.-con. warehouse and laundry center at California Medical Center. **$325,000.** CD 8/24/44.

† **Calif., San Mateo**—POST OFFICE—General Services Admin., 18 and F Sts. N. W., Wash. 25, D. C., post office, etc. exten., remodeling. **$680,000.**

Conn., Derby—HOUSING—City of Derby Housing Auth., Frank McLaughlin, chn., plans by Sebastian J. Passanesi, 164 Court St., Middletown, 50 housing units, **$450,000.**

▲ **Conn., East Hartford**—HOUSING—Town of East Hartford Housing Auth., 70 Cannon St., plans by Kane & Fairchild, 49 Pearl St., Hartford, 100 family units, Columbus St. **$1,075,000.** CD 11/2.

Conn., North Haven—SCHOOL—Town of North Haven Bd. Selectmen, Town Hall, plans by Carl Malmfeldt & Assoc., 36 Pearl St., Hartford, school, auditorium-gymnasium, library, cafeteria, Maple Ave. and Bailey Rd. **$900,000.** CD 1/11.

▲ **Conn., Waterbury**—HOUSING—City, Lester E. Young, chn. Waterbury Housing Auth., 24 Warner St., plans by Albert B. Fucito & Sons, 143 S. Elm St., 285 family units garden apartments, Buck Hill. **$2,500,000.** CD 10/27.

▲ **Fla., Daytona Beach** — HOUSING — Daytona Beach housing Auth., c/o Alan J. MacDanough, archt., 15 Wild Olive Ave., Daytona Beach, 750 housing units, Approx. **$1,000,000.** CD 11/11.

▲† **Fla., Gainesville**—POST OFFICE, etc.—General Services Admin. 18 and F Sts. N. W., Wash. 25, D. C., post office and courthouse, new site and bldg. **$1,300,000.** CD 10/22/45.

† **Fla., Lakeland** — POST OFFICE — General Services Admin., 18 and F Sts., N. W., Wash., 25, D. C., post office etc., new site and bldg. **$800,000.** CD 10/22/45.

Idaho, Idaho Falls—AUDITORIUM—City, City Hall, plans by Fetzer & Fetzer, Zions Savings Bank Bldg., Salt Lake City, Utah, civic auditorium, Approx. **$250,000.** CD 12/28.

† **Ill., Chicago**—POST OFFICE—General Services Admin., 18 and F Sts. N. W., Wash. 35, D. C., post office, Garfield Park Station, site and bldg. **$650,000.** CD 10/25/45.

† **Ill., Granite City**—POST OFFICE—General Services Admin. 18 and F Sts. N. W., Wash. 25, D. C., post office, etc., new site and bldg. or demolition and new bldg. **$350,000.** CD 10/25/45.

† **Ill., Urbana**—POST OFFICE—General Services Admin. 18 and F Sts. N. W., Wash. 25, D. C., post office, etc. addnl. land, demolition and new bldg. **$790,000.**

▲ **Ind., Hammond**—COURT HOUSE—Bd. Comrs. Lake Co., Stanley Olszewski, aud., Court House, Crown Point, plans by Joe H. Wildermuth & Co., 527 Broadway, Gary, 4 story, L-shaped, 70x300 ft. and 70x280 ft., brick, stone, rein.-con. structural steel court house, Indianapolis Blvd. **$2,000,000.** CD 9/14/45, under Ind. Crown Point.

Ia., Cherokee—SCHOOL—Ind. School Dist., Cherokee, defeated $326,000 bonds high school, **$533,000.** CD 1/26.

▲ **Ky., Louisville** — HOUSING — Louisville Municipal Housing Comn., Second St., plans by Fred Harstein, 419 W. Jefferson St., 1,500 unit municipal housing. **$2,000,000.** Ossian P. Ward, Washington Bldg., and Louis & Henry, Starks Bldg., engrs. CD 12/6.

Ky., Paris—HOUSING—Paris Housing Comn., Paris, 75 unit, 2 story, brick housing. **$500,000.**

▲ **Md., Sykesville** — HOSPITAL — State Dpt. Pub. Imprvts., 506 Park Ave., Baltimore, plans by Henry Powell Hopkins, 10 E. Mulberry St., Baltimore, two 1 story, 295x334 ft., brick bldgs., 1 each for disturbed men and women, Springfield State Hospital. **$1,940,000.** John B. Funk, 506 Park Ave., Baltimore, ch. engr. CD 1/19.

Mass., Amherst — ENGINEERING — Commonwealth of Mass., University of Mass., R. I. Hawley, treas., Amherst, engineering bldg., equipment, **$636,000.**

▲ **Mass., Danvers** — INFIRMARY — Commonwealth of Mass., Dpt. Mental Health, 15 Ashburton Pl., Boston, medical bldg. and infirmary, State Hospital, **$2,025,000.** CD 1/25/45.

Mass., Leominster—SCHOOL—City, Dr. J. V. McHugh, supt. Schools, brick, steel school, Pleasant St. Approx. **$250,000.**

Mass., Norfolk—HOSPITAL—Commonwealth of Mass., Dpt. P. Health, State House, Boston, plans by Drummey-Duffill, Inc., 80 Boylston St., Boston, hospital, Pondville State Hospital, **$965,000,** R. D. Kimball, 6 Beacon St., Boston, consult. engr.

Mass., Northfield—SCHOOL—Towns of Warwick, Leyden, Gill, Northfield, and Bernardston, c/o F. S. Turner, Supt. Schools, Northfield, brick steel, Regional High School, **$500,000.**

Mass., Tewksbury—PLANT—Commonwealth of Mass., Dpt. P. Welfare, 600 Washington St. Boston, plant changes incl. installing turbo-generator, **$100,000.**

▲ **Mich., Ann Arbor**—HOSPITAL—University of Mich., Ann Arbor, plans by Skidmore, Owings & Merrill, assoc. archts., 5 E. 57 St., New York, N. Y., rein.-con., masonry out patient hospital, **$3,000,000.** Giffels & Vallet, Inc., 100 Marquette Bldg., Detroit, consult. engr.

Mich., Lincoln Park (br. Detroit)—SCHOOL—Bd. Educ., 1300 Lincoln Park, masonry, concrete, structural steel Carr School, Horger School and Hoover School addns., alterations. **$685,000.**

Minn., Forest Lake—SCHOOL—Bd. Educ., F. E. Anderson, clk., plans by W. M. Ingemann & M. V. Bergstedt, 345 Minnesota St., St. Paul, high school, **$328,700.**

Mo., Clayton (St. Louis 5, P. O.)—COURTHOUSE—St. Louis Co., c/o Judge Luman F. Matthews of County Court, Clayton, replacing center section of old courthouse; modernizing south wing, **$500,000.**

Mo., St. Louis—HOSPITAL—City, c/o Frank J. McDevitt, pres., Bd. P. Serv., 304 City Hall, Zone 3, reconstr., remodel administration and 2 ward bldgs., City Hospital 1. **$900,000.**

Neb., Kearney—SCHOOL—Bd. Educ., Kearney, plans by Helleberg & Helleberg, Kearney, Bryant School. **$275,000.**

† **Neb., Omaha**—ARMORY—U. S. Eng., 1709 Jackson St., armory at Naval Station, Fort Omaha. **$300,000.**

Neb., St. Paul—SCHOOL—Bd. Educ., St. Paul, **$275,000** bond election Feb. 28, school.

▲ **N. H., Nashua**—HOUSING—Nashua Housing Auth., Nashua, 200 family unit housing. **$1,500,000.**

† **N. J., Hackensack**—POST OFFICE—General Services Admin. 18 and F Sts. N. W., Wash. 25, D. C., post office, etc., addnl. land, exten., remodeling. **$900,000.** CD 11/9/45.

† **N. J., Maplewood**—POST OFFICE—General Services Admin., 18 and F Sts. N. W., Wash. 25, D. C., post office, etc., site and bldg. **$400,000.**

† **N. Y., Hempstead**—POST OFFICE—General Services Admin., 18 and F Sts., N. W., Wash. 25, D. C., post office, etc., addnl. land, exten., remodeling, **$500,000.**

▲† **N. Y., New York**—BARGE OFFICE, etc.—General Services Admin., 18 and F Sts., N. W., Wash. 25, D. C., barge office, exchange, demolition and new bldg. **$6,300,000;** post office Tompkins Square station, new site and bldg., **$743,000.** CD 10/5/45.

▲† **N. C., Fayetteville** — COURHOUSE, etc. — General Services Admin., 18 and F Sts. N. W., Wash., 25, D. C., courthouse and post office, **$2,145,000.**

† **N. C., Hickory** — POST OFFICE — General Services Admin., 18 and F Sts., N. W., Wash. 25, D. C., post office, etc., addnl. land, exten., remodeling, **$435,000.** CD 10/11/45.

▲ **N. C., Raleigh**—SCHOOLS—Bd. Comrs. Wake Co., John P. Swain, chn. Bd., Raleigh, bond election Mar. 21, schools. **$4,250,000.**

N. C., Wilson—GRAIN ELEVATOR—Bd. Comrs. Wilson Co., Walter F. Blalock, chn., Wilson, grain elevator. **$300,000.** Cargill, Inc., 200 Grain Exchange Bldg., Minneapolis, Minn., lessee.

N. D., Williston—COURTHOUSE—Williams Co., Williston, plans by W. F. Kurke & Assoc., 1117 13 Ave. N., Fargo, courthouse. **$275,000.**

O., Cleveland—OFFICE—Bd. Comrs. Cuyahoga Co. Courthouse, plans by Garfield, Harris, Robinson & Schafer, 1740 E. 12 St., office bldg., west of Ontario St., Lakeside Ave. CD 3/25/46.

▲ **O., Cleveland**—SCHOOLS—Bd. Educ., 1380 E. 6 St., auditorium at East High School, 1330 E. 82 St. **$450,000;** 2 brick bldgs. for Valley View School and Iowa Maple School, Iowa Ave. **$360,000;** 4 room schools, Violet and Hudson Aves., W. 150 and E. 187 Sts. **$300,000.** CD 3/1/43.

O., Mansfield—GARAGE, etc.—City, 2 story underground garage and auditorium-exhibition hall, on site of Central Park. **$810,000.**

O., Warren—AUDITORIUM—City, City Hall, plans by Arthur F. Sidells and Keich & O'Brien, Warren, auditorium. **$750,000.** CD 12/14.

† **O., Youngstown**—ARMORY—U. S. Eng., 830 W. Broadway, Louisville 1, Ky., 20,000 sq. ft. armory with administrative space, for Organized Reserve Corps., Fort Hayes, Columbus, **$400,000-$500,000.**

▲ † **Okla., Oklahoma City**—POST OFFICE—General Services Admin., 18 and F Sts. N. W., Wash. 25, D. C., post office, new site and bldg. **$3,300,000.** CD 12/1.

Tenn., Clarksville—HOUSING—Clarksville Housing Auth., Clarksville, plans by Speight & Hibbs, Clarksville, 200 housing units. Approx. **$750,000.**

† **Tenn., Memphis** — POST OFFICE — General Services Admin., 18 and F Sts., N. W., Wash. 25, D. C., post office, courthouse and customhouse, remodeling, **$770,000.** CD 11/23/45.

† **Tenn., Oak Ridge**—RESEARCH—U. S. Atomic Energy Comn., Oak Ridge, 2 story structure with four adjoining 1 story wings, 161,000 sq. ft. research bldg., Oak Ridge National Laboratories. CD 8/12/48.

Tex., Andrews—HIGH SCHOOL—Andrews Independent School Dist., Andrews, plans by Haynes & Kirby, 19 and Dixie Dr., Lubbock, gymnasium, vocational shop, classroom Junior-High School addn. **$250,000.**

▲ **Tex., College Station**—BUILDINGS—Agricultural & Mechanical College of Texas, College Station, plans by Carleton Adams, c/o owner, 3 story engineering, **$611,000;** addnl. masonry electrical engineering, **$160,000;** gravel and asphalt farm roads. **$58,000;** greenhouse, **$50,000;** agronomy barns, storage, etc. **$77,000;** animal husbandry center, incl. animal stalls and swine pens, **$149,000;** poultry plant, **$213,000;** 2 story physical educ. **$741,000;** 2 story engineers library, **$303,000;** farm warehousing for implement storage, primarily, **$200,000;** veterinary hospital, **$395,000.** CD 9/30.

Tex., Colorado City—HOUSING—Colorado City Housing Auth., Colorado City, 75 low-rental housing units. **$525,000.**

▲ **Tex., Dallas**—SCHOOLS—Dallas Independent School Dist., Akard and Royal Sts., plans by Phil T. Crown, 1335 Plowman St., masonry Pacific Ave. School **$300,000;** plans by Danna & Welch, 2618 Cedar Springs Rd., Urban Park School, 6900 Military Dr. **$250,000;** plans by Tatum & Quade, 2812 Fairmount St., K. B. Polk School (Old York) Thedford and Three Sts. **$250,000;** plans by George L. Dahl, 2101 N. St. Paul St., Northwest Dallas Junior-High School, **$600,000;** plans by Smith & Mills, Mercantile Bank Bldg., 2 story, masonry John Neely Bryan School, Easter and Deer Path. **$375,000;** plans by Clifford L. Jane, 4801 Lemmon St., Margaret B. Henderson School, Edgefield and Melbourn Sts., **$250,000;** plans by C. H. Griesenbeck, 309 Commerce Bldg., Obadiah Knight School, Maple and Anson Sts., **$250,000;** plans by J. N. McCammon, 505 N. Ervay St., Reinhardt School, Peavy Rd., **$275,000;** plans by Buford & Feinberg, 1801 San Jacinto St., Letot School, California Cross Rd. **$400,000;** plans by Walter Cook & Assoc., 9003 Denton Dr., Susie L. Williams School, **$300,000;** plans by Wiltshire & Fisher, 4703 Ross Ave., Lincoln High School addn., Oakland and Slow Sts. **$350,000;** plans by Christensen & Christensen, 807 N. Paul St., Lakewood School, **$300,000;** plans by Wyatt C. Hedrick, 904 Fort Worth Ave., H. S. Thompson School. **$350,000;** plans by Robert D. Goodwin, 4801 Lemmon St., George Peabody School addn., Gibbs and Scholdell Sts. **$300,000.** Mark Lemmon, 1201½ Main St., consult. archt. CD 10/6.

Tex., Denton—POWER PLANT—City, plans by Wilson & Patterson, Majestic Bldg., Fort Worth, 2 story masonry power plant addn. **$175,000.** CD 10/24/46.

Tex., Harlingen—CITY HALL, etc.—City, voted bonds, city hall and fire station. **$250,000.** J. R. Brule, c/o owner, city engr. CD 1/12.

Tex., Houston—SCHOOL—Houston Independent School Dist., 1600 Washington St., plans by Thomas A. Graecen, 1010 Winbern St., brick Trinity Gardens School addn., concrete frame and fdn. **$300,000.** CD 6/23/47.

Tex., Llano—SHOP, etc.—Llano Independent School Dist., Llano, bond election Mar. 4, auditorium gymnasium, woodworking shop, **$250,000;** elementary school, remodeling, cafeteria, **$275,000.** Herbert Kellner, 406 Austin Hy., San Antonio, archt. CD 11/17.

Tex., Pasadena—HOSPITAL—City, defeated bonds hospital. **$600,000.** George H. Smith, city engr. CD 1/9.

Tex., Temple—HOUSING—Temple Housing Auth., Temple, plans by Buttrill & Turley, Box 45, and Giesecke, Kuehne & Brooks, 121 E. 8 St., Austin, 75 low cost housing units. **$525,000.** CD 10/18.

▲ **Tex., Waco**—SCHOOLS—Waco Independent School Dist., Waco, plans by Gustav R. Olsen, Service Mutual Bldg., school alteration, remodeling, **$300,000;** elementary school, **$400,000;** grade school. **$550,000.** CD 10/20.

Tex., Wortham — HOUSING — Wortham Public Housing Auth., Wortham, plans by Boese & Harkrider, 423 N. Main St., Fort Worth, 80 low cost housing units. **$582,000.** CD 11/25.

† **Va., Staunton** — POST OFFICE — General Services Admin., 18 and 3 Sts. N. W., Wash. 25, D. C., post office, etc., addnl. land, exten. and remodeling, **$465,000.**

Wash., Finley—HIGH SCHOOL—River View School Dist., Finley high school. **$400,000.**

Wash., Longview—SCHOOL—School Bldg., Longview, voted bonds Junior High School. **$740,000.** Wolff & Phillips, Pearson 4 Ave. Bldg., Portland, Ore., archts. CD 12/14.

Wash., Renton—HOUSING—Renton Housing Auth., Renton, 100 housing units, **$800,000.**

▲ **Wash., Seattle**—HOSPITAL—University of Washington, E. 40 St. and 15 Ave. N. E., Zone 5, bond election Nov. 7, teaching and research hospital. **$10,000,000.** CD 9/2.

▲† **W. Va., Huntington** — OFFICE — General Services Admin., 18 and F Sts. N. W., Wash. 25, D. C., federal office bldg. **$4,700,000.**

Wis., Berlin—HIGH SCHOOL—Bd. Educ., Berlin, plans by Raymond N. LeVee & Assocs., 203 E. College Ave., Appleton, 1 story, 156x190 ft., memorial auditorium high school addn. **$225,000-$250,000.**

Wis., Delavan—GRADE SCHOOL—Bd. Educ., Delavan, plans by Law, Law, Potter & Nystrom, 121 S. Pickney St., Madison, school. **$400,000.**

† **Wis., Stevens Point**—POST OFFICE—General Services Admin., 18 and F Sts. N. W., Wash. 25, D. C., post office, etc., new site and bldg. **$395,000.** CD 12/3/45.

Wyo., Cheyenne—SCHOOL—School Dist. 1, Bd. Educ., Supt. Schools, 2118 Central Ave., voted bonds, 1 story 21-room Henderson School, **$250,000.** Kellogg & Kellogg, 1909 Carey Ave., archts. and engrs. CD 2/27/48.

Alaska, Fairbanks—POLICE STATION, etc.—City, City Hall, Fairbanks, police station, jail, city center, **$350,000.**

Alaska, Klawock—SCHOOL—School Bd., Klawock, school **$600,000.**

▲ **Alaska, Sitka**—POWER PLANT, etc.—City, City Hall, power plant, transmission and distr. lines. **$1,500,000.** CD 1/18/46.

Alta., Edmonton—OFFICE—Province of Alberta, Edmonton, plans by P. Campbell-Hope, 311 Union Bldg., 3 story, bsmnt., steel, rein.-con. lands title office bldg., for Dpt. Lands and Mines. **$600,000.**

B. C., Powell River—HOSPITAL—Powell River Sick Benefit Society, Powell River, plans by Gardiner & Thornton, 1664 W. Broadway, Vancouver, 40 bed hospital exten., Approx. **$250,000.**

N. B., St. John—DWELLINGS—Municipality, 48 dwellings, Price Edward St, **$300,000**

N. S., Baddeck—SCHOOL—Dpt. Educ., Halifax, rural high school, **$350,000.** T. P. Lushy, ch. engr.

▲ **Ont., Hamilton**—SCHOOL, etc.—Hamilton College Bd., Hamilton, nursing school and residence, **$250,000;** physical sciences bldg., **$1,300,000.**

Ont., Richmond—HIGH SCHOOL—South Carleton High School Dist. Bd., Carleton Co., Courthouse, Ottawa, high school. Approx. **$400,000.**

Ont., Toronto—SCHOOL—Bd. Educ., 155 College St., C. H. R. Fuller, bus. administrator, exten. health school and erecting school for crippled children, High Pak Ave. near Bloor St. W. and Pacific Ave. Approx. **$950,000.** C. E. Dyson, c/o owner, archt. CD 8/19/48.

Que., Montreal—SCHOOL—Catholic School Comn., West St. Catherine St., school in Pointe Ste. Charles, Approx. **$300,000;** reconstr. Jacques Cartier Normal School in Lafontaine Park, Approx. **$250,000.**

Que., Montreal—SCHOOL—Protestant Central School Bldg., McTavish St., school in Maisoneuve Ward, Vidu St. **$500,000.**

COMMERCIAL BUILDINGS

Calif., Berkeley—HOSPITAL—Herrick Memorial Hospital 2001 Dwight Way, plans by James Francis McGuiness, 488 Pine St., San Francisco, 3 story, rein.-con. hospital addn. **$300,000.** CD 2/6

Colo., Denver—APARTMENT—Ben Cook Investment Co., Denver, plans by Charles Strong, engr. and archt., C. A. Johnson Bldg., 7 story apartment, 15 and Sherman Sts. **$750,000.**

Conn., Danbury—BUSINESS—Tri-Corner Realty Corp., President Joseph Trister, 272 Main St., plans by Paul Sternbach, 366 Atlantic St., Stamford, 2 story, 100x140 ft., brick, steel, concrete business bldg., Main and Elm Sts. **$250,000.**

Ga., Atlanta—APARTMENT UNITS—The Point Apartments, Inc., c/o P. N. Wilkinson, 519 Western Union Bldg., 76 apartment units, **$300,000**

▲ **Ill., Chicago**—APARTMENT—Owner, c/o Shaw, Metz & Dolio, archts., 208 S. La Salle St., apartment, Walton and Seneca Sts. **$1,500,000.**

Ill., Glencoe—SCHOOL—North Shore Israel Congregation, 840 Vernon St., plans by Friedman, Alschuler & Sincere, 223 Jackson Blvd., Chicago, Zone 6, school. **$300,000.**

Ind., Hammond—OFFICE—Northern Indiana Pub. Service Co., 5265 Hohman Ave., plans by W. C. Hutton, 5231 Hohman Ave., Hammond, 2 story, 41x71 ft., brick, structural steel, concrete office; 2 story, 85x186 ft., brick, structural steel, concrete store room; two 1 story, 50x110 ft. and 42x144 ft., brick, structural steel, garages. **$270,000.**

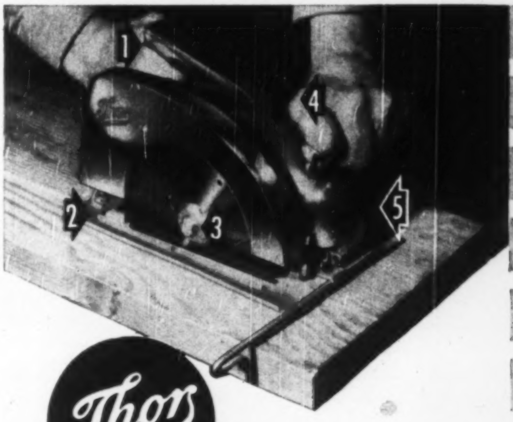
▲ **Ia., Burlington**—HOSPITAL—Burlington Protestant Hospital, Burlington, hospital addn. **$1,000,000.**

Ia., Iowa City—APARTMENT—Corbin Crawford, Ainsworth, plans by Federal Eng. Co., Putnam Bldg., Davenport, apartment. **$900,000.**

▲ **Ky., Fern Creek**—HOUSING—L. H. Callaway, Baster Ave., 70 unit housing. **$1,500,000.**

▲ **Ky., Louisville**—APARTMENT—Josh T. Adams, Martin Adams & Sons, Commonwealth Bldg., plans by Peyton & Davis, 208 W. Jefferson St., 100 unit, 10 or 12 story apartment, Cherokee Rd. and Bonnycastle Ave. **$1,200,000.**

▲ **Md., Baltimore**—RESIDENCES—Seymour Ruff, 101 W. 22 St., Zone 18, seventy-five 2 story, bsmnt., 42x52 ft. stone residences, Cross Country Blvd., Strathmore Park. **$1,875,000.**



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Md., Green Spring Manor—RESIDENCES—Keystone Realty Co., Inc., Stanley C. Podgar, 215 N. Calvert St., Baltimore, plans by Fenton & Lichtig, 2023 Maryland Ave., Baltimore, two hundred 1½ and 2 story, detached, brick, frame residences, Smith Ave. and Seven Mile Lane.

▲ **Mass., Lexington**—HOUSING—Owner, c/o Wm. Butler, 141 Mt. Vernon St., Arlington, plans by G. B. Northrup, 266 Lake St., Belmont, approx. 500 houses, Wheeler Property, **$5,000,000.**

Mass., Somerville—SCHOOL—CONVENT—St. Polycarp's R. C. Parish, R. F. Garity, pastor, 100 Temple St., 2 story, brick, concrete parochial school-convent, Mystic Ave. **$250,000.**

▲ **Mass., Williamstown**—BIOLOGY LABORATORY, etc.—Williams College, Dr. J. P. Baxter, III, pres., plans by Des Granges & Steffian, 161 Devonshire St., Boston, 2 and 4 story, bsmnt., brick, steel biology laboratory, **$500,000;** 4 story, bsmnt., brick, steel, astronomy and physical laboratory, **$750,000,** Williams College Campus.

Mass., Winchester—CHURCH—Immaculate Conception Parish, H.K.A. Driscoll, pastor, 1004 Main St., 1 story, bsmnt, brick, stone church, **$300,000.**

Mich., Sebewaing — CHURCH — Immanual Lutheran Church, plans by Merritt & Cole, 7376 Grand River, Detroit, masonry, brick, limestone, rein.-con., structural steel church. **$250,000.**

Mo., St. Louis—COMMERCIAL—Owner, c/o Murphy Realty Co., 6376 Clayton Rd., Zone 10, plans by Charles M. Zacha, Jr., 4908 Tholozan Ave., Zone 9, 2 story, commercial bldg., Goodfellow Blvd. and Switzer Ave. Approx. **$250,000.**

Neb., Lincoln—CHURCH—Trinity Lutheran Church, 13 and H Sts., plans by Davis & Wilson, Stuart Bldg., church addn. **$300,000.**

▲ **N. Y., New York**—OFFICE, etc.—Arthur Enterprises, Inc. 170 Nassau St., Zone 7, plans by William I. Hohauser, 1841 Broadway, Zone 23, office, theatre, and apartment, 4275-4301 Broadway. **$1,500,000.**

N. Y., New York—APARTMENT—Sedgwick Towers, Inc., 2685 University Ave., Zone 63, plans by Tito DiVincenzo, 209 S. 5 St., Mt. Vernon, 6 story apartment, Sedgwick Ave. south of Kingsbridge Rd. **$610,000.** CD 4/24/47.

O., Ashland—HOSPITAL—Samaritan Hospital, Ashland, plans completed by Samuel Hannaford & Sons, 1024 Dixie Terminal Bldg., Cincinnati, hospital addn. **$420,000.**

O., Cincinnati—PHARMACY COLLEGE—Cincinnati College of Pharmacy, Ralph Kinross, pres., 423 W. 8 St., sketches by Harry Hake & Harry Hake, Jr., engrs. and archts., 2400 Gilbert Ave., 3 story, bsmnt, brick, concrete pharmacy college.

O., Cleveland—BOWLING ALLEY—Earl S. Linsz & Ray Bunch, 175 E. 208 St., bowling alley, 1301 Superior Ave. **$500,000.**

O., Cleveland—BUILDING—Visiting Nurses Assn., Inc., 2157 Euclid Ave., plans by Garfield, Harris, Robinson & Schafer, 1740 E. 12 St., 3 story, 12,500 sq. ft. building, containing offices, assembly and committee rooms, 3328 Chester Ave. **$375,000.** CD 11/19/45.

O., Girard—HOTEL—Stockholders of Girard Community Hotel, c/o Peter M. Wellman, Girard, 50-room hotel with store rooms, coffee shop and cocktail bar, S. State St. and Second St. **$270,000.**

O., Middletown—STORE—Mid-Gordon Co., Ellsworth Ireland in charge, 4500 Carew Tower, Cincinnati, 2 story, bsmnt, brick store. **$250,000.** J. C. Penney Co., George E. Mack, vice pres., 330 W. 34 St., New York N. Y., lessee.

O., Toledo—Y. M. C. A. BLDG.—Young Mens Christian Assn., 1110 Jefferson St., West Toledo Y. M. C. A. bldg. **$400,000-$440,000.**

Okla., Bartlesville—DORMITORIES, etc.—Central Christian College, Bartlesville, plans by Hanton & Wilson, Elliott Bldg., Tulsa, 2 dormitories, gymnasium. **$250,000.**

Okla., Bartlesville—HOSPITAL—Jane Phillips Foundation, Bartlesville, 50 bed Jane Phillips Memorial Hospital. **$500,000.**

Pa., Ambler—APARTMENT—Owner c/o Charles Frederick Wise, archt., 2063 S. Cecil St., Phila., apartment, Reiss Mill Rd. **$500,000.**

Pa., Phila.—HOSPITAL—Misericordia Hospital, 54 St. and Cedar Ave. plans by Thomas J. Earley, 1701 Walnut St., hospital addn. **$250,000.**

Pa., Phila.—BANK—Pennsylvania Co. for Banking & Trusts, 15 and Chestnut Sts., plans by Sydney E. Martin, 117 S. 17 St., bank. **$500,000.**

Pa., Pottstown—HOSPITAL—Pottstown Hospital, 1472 Sunset Dr., hospital adn. **$300,000.**

Tenn., Memphis — CLUBHOUSE — Chickasaw Golf Club, 3395 Galloway St., clubhouse, swimming pool, etc. **$250,000.**

Tenn., Memphis—APARTMENTS—Georgian Woods Development Corp., c/o Faires & Sanford, archts., Porter Bldg., 15 apartments. **$750,000.**

Tenn., Nashville — EDUCATIONAL — Belmont Baptist Church, c/o Hibbs, Parrent & Hall, archts., Nashville Trust Bldg., educational bldg. addn. **$350,000.**

Tex., Abilene—DWELLINGS—L. A. Wilke & Assoc., Abilene, 30 dwellings. **$250,000.**

Tex., Austin—HEADQUARTERS—Texas State Teachers Assn., C. H. Tennyson, exec. dir., Littlefield Bldg., plans by Page, Southerland & Page, 602 West Ave., 2 story 17,500 sq. ft., brick headquarters, concrete, steel frame and fdn., air-conditioned. **$250,000.**

Tex., Dallas—CHAPEL, etc.—Congregation Shearith Israel, 1324 Park Ave., chapel and educational, on 12 acre site purchased. **$250,000.**

▲ **Tex., Dallas**—OFFICE, etc.—International Harvester Co., Irving Blvd., plans by Fred Prather, 180 N. Michigan St., Chicago, Ill., 200,000 sq. ft. office bldg. and parts depot. **$1,000,000.**

Tex., Dallas—COMMERCIAL—E. M. Kahn & Co., Main and Lamar Sts., remodeling masonry commercial bldg., incl. air-conditioning, 1604 Main St. **$300,000.**

Tex., Dallas—DWELLING and APARTMENT—M. L. & S. M. Merrick, 1423 Renner St., masonry dwelling and apartment proj., concrete slab fdn., Corinth and 11 Sts. etc. **$250,000.**

Tex., Houston—DWELLINGS—Bayou Estates, Inc., c/o W. C. Lowery, 7745 Buena Vista St., 74 addnl. cedar shakes dwellings, concrete slab fdn., in Sims Bayou Estates area, **$700,000;** 27 frame dwellings, concrete slab fdn. El Rancho St., **$250,000.**

Tex., Houston—DWELLINGS—Home Owned Properties, Inc., Scanlan Bldg., 47 addnl. dwellings, Epsom Downs Annex. **$329,000.** E. S. & Robert M. Atkinson, 1st Natl. Bank Bldg., consult. engrs.

Tex., Houston—RESIDENCES—Home Owned Properties, Inc., Scanlan Bldg., 75 addnl. frame residences, concrete slab fdn., Farmsted Acres. **$300,000.**

Tex., Houston—DWELLINGS—W. E. Robertson Constr. Co., 1537 Gardenia St, 42 frame dwellings, in South Union addn **$250,000.**

Tex., Houston—APARTMENT—L. P. McKinzey, W. Albama and Weslyean Rd., brick veneer, concrete frame apartment, concrete slab pier fdn. **$500,000.**

Tex., Houston—EDUCATION YOUTH CENTER, etc.—St. Pauls Methodist Church, c/o Dr. Albert Shirkey, pastor, 5501 Main St., plans by Alfred C. Finn, Bankers Mortgage Bldg., education and youth center, **$350,000;** chapel, **$300,000;** recreational, **$250,000.** CD 2/2.

Tex., Houston—HOUSING—Monroe Shakno, 1014 Earle St., housing. **$250,000.**

Tex., Taft—HOSPITAL—Civic and Kiwanis Clubs, Taft, plans by William C. Wood, 422 N. Lower Broadway, Corpus Christi, 25 bed hospital. **$250,000.** CD 2/11/49, under Public Buildings.

Tex., Waco—OFFICE—Brazos River Transmission Electric Co-operative, Inc., Waco, plans by Harris H. Roberts, 1105 Medical Arts Bldg., steel, glass block office and 6 facilities bldgs., concrete slab fdn., air-conditioning, etc. **$250,000.**

Tex., Waco—HOSPITAL—Hillcrest Memorial Hospital, Waco, plans by Walter Cocke, 1507 Franklin Ave., hospital addn. **$450,000.** Robert Garrett, 2905 Milam St., Houston, consult. archt.

▲ **Wash., Ephrata**—HOTEL—J. M. Stoddard, Medford, Ore., resort hotel. **$1,000,000.**

Wash., Sunnyside—HOUSES—Modern Home Builders, Inc., 3839 34 Ave. W., Seattle, 40 houses. **$306,000.**

Alaska, Anchorage—CLUB—Young Men's Christian Assn., Anchorage, club. **$300,000.**

Alaska, Fairbanks—DWELLINGS—P. G. Strand, Fairbanks, 62 multiple unit dwellings. **$700,000.**

Alaska, Juneau—APARTMENTS—Bayview Development Co., Juneau, four 2 story apartments. Approx. **$250,000.**

Alta., Lethbridge—HOUSES—Owner c/o S. M. Fengstad, Parkview Hotel, Lethbridge, 50 houses, Approx. **$325,000.**

Que., Marsboro—CHURCH, etc.—Roman Catholic Parish of Marsboro, Marsboro, plans by J. A. Poulin, 71 Prospect St., Sherbrooke, church and hall, **$275,000.**

Que., Mont Laurier—CHURCH—Roman Catholic Parish of Mont Laurier, Mont Laurier, plans by J. E. Perron, 5362 Louis Colin Ave., Montreal, church, **$250,000.**

Que., Montreal—PATIENTS—Children Memorial Hospital Bd., 1615 Cedar Ave., plans by J. H. Molson, 1615 Cedar Ave., outdoor patients bldg., St. Antonie St., **$250,000.**

Que., Montreal—CHURCH—Roman Catholic Parish of St. Kevins Rev. W. J. Sullivan, P. P., 3747 Coronet Rd., church, Ridgevale Ave. **$250,000.**

INDUSTRIAL BUILDINGS

Ark., Jonesboro—WAREHOUSE—Heinemann's Inc., Jonesboro, plans by Halsey & Hall, Sterick Bldg., Memphis, Tenn., warehouse. **$150,000.**

Calif., Point Arena—MILL—Bootjack Lumber Co., Point Arena, lumber mill, **$100,000.**

Colo., Longmont—PLANT—Western Solvents, Inc., Longmont, grain alcohol plant. Approx. **$300,000.**

Del., Dover—BUS TERMINAL—James E. Turner, Sr., Dover, plans by Pope & Kruse, Elks Bldg., Wilmington, bus terminal. **$100,000.**

▲ **Ill., Cicero**—FACTORY—Hotpoint, Inc., 5600 W. Taylor St., Chicago, 1,000,000 sq. ft. refrigerator mfg. factory, 16 St. and 54 Ave. **$12,000,000.**

▲ **Ill., Chicago**—WAREHOUSE—American Brass Co., 4601 W. North Ave., 1 story 200,000 sq. ft., warehouse. **$1,500,000.**

Ill., Chicago—FACTORY—H. C. Christians, 1550 Blue Island Ave., factory, 1580 W. 15 St. **$750,000.** Battey & Childs, 231 S. LaSalle St., consult. engrs.

Ill., Chicago—FACTORY—David E. Kennedy, Inc., 4532 S. Kolin St., plans by A. Epstein & Sons, 2011 W. Pershing St., Zone 9, 1 story, 60,000 sq. ft., factory addn. **$300,000.**

▲ **Ill., Matteson**—GAS HOLDER—Public Service Co., of North Illinois 72 W. Adams St., Chicago, gas holder, near here. **$3,000,000.**

Ia., Newton—PLANT—Maytag Co., Newton, 2 plant addns. **$600,000.**

Kan., Concordia—GRAIN ELEVATOR—Association of local farmers, Dean Hanson, chn., Concordia, grain elevator. **$150,000.**

▲ **La., Egan**—PLANT—Sun Oil Co., Meraux St., New Orleans, natural gasoline plant. **$3,000,000.**

La., Sulphur—RICE DRIER—Sulphur Rice Co-operative, c/o Morris Drost, chn., reconstruct rice drier, $200,000.

Mich., St. Joseph—FACTORY—Nineteen Hundred Corp., Industrial St., plans by Graham, Anderson, Probst & White, 80 E. Jackson St., Chicago 4, Ill., 100,000 sq. ft. washing machine factory addn. **$600,000.** CD 3/5/46.

▲ **Miss., Yazoo City**—PLANT—Mississippi Chemical Co., Yazoo City, chemical plant, **$2,500,000.**

Neb., Lincoln—WAREHOUSE—Lincoln Telephone & Telegraph Co., 1342 M St., plans by M. I. Aitken, Stuart Bldg., warehouse. **$175,000.**

▲ **N. M., Carlsbad**—CHEMICAL PLANT—Potash Co. of America, c/o Parker S. Dunn, res. mgr., Carlsbad, chemical plant for production potassium sulphate and hydrochloric acid. **$1,000,000.**

O., Cleveland—PLANT—Liff Electric Co., 5026 Woodland Ave., L shaped parcel fronting plant on Payne Ave. and E. 24 St. **$200,000.**

O., Cleveland—WAREHOUSE, etc.—Riss Trucking Co., 1234 E. 38 St., 40,000 sq. ft. warehouse and dock, E. 176 St. and St. Clair Ave. **$500,000.**

▲ **Okla., Oklahoma City**—VACUUM TUBE UNIT—Monarch Refineries, Inc., 2800 N. E. 4 St., vacuum tube unit, Approx. **$2,500,000.**

Ore., Portland—PLANT—California Container Corp., 934 N. E. 25 St., 1 story, 80,000 to 100,000 sq. ft. plant for mfg. folding cartons and corrugated shipping containers.

Tex., Dallas—PLANT—Big Top Flavors, Inc., 1905 Plantation Rd., soft drink flavor mfg. plant. **$250,000.**

Tex., Dumas—SMELTER—American Zinc Co., Dumas, reconstruct portion smelter. **$100,000.**

Tex., Eastland—PLANT—Lone Star Gas Co., 1915 Wood St., Dallas, 15,000 gal. per day increased plant capacity. **$550,000.**

▲ **Tex., Etter**—CHEMICAL PLANT—Phillips Chemical Co., Etter, 100,000 tons annually chemical plant expansion **$3,000,000.**

Tex., Garwood—INJECTION UNIT—Superior Oil Co., Oil & Gas Bldg., Houston, injection unit, near here. **$750,000.**

Tex., Houston—POWER PLANT—Methodist Hospital, 3020 San Jacinto St., and St. Lukes Episcopal Hospital, 6265 Main St., plans by Watkin, Nunn, McGinty & Phenix, 5009 Carolina St., engrs. and archts., power plant. **$700,000.** H. A. Salisbury, and Staub & Rather, 3500 Buffalo Dr., advisory archts.

Tex., LaGrange—PLANT—South Texas Producers Assoc., c/o F. R. Dykes, La Grange, milk processing plant. **$150,000.**

Tex., Port Arthur—WAREHOUSE, etc.—Gulf States Utilities Co., Port Arthur, service warehouse and shop, 5 acre site, 9th Ave. **$500,000.**

▲ **Wash., Vancouver**—GRAIN ELEVATOR—Great Western Malting Co., Manitowoc, Wis., 60 x 700 ft. rein.-con. grain elevator, 225 ft. high. **$1,000,00.** E. F. Carter, 837 W. Hast St., Vancouver, B. C., consult. engr.

Wyo., Newcastle—REFINERY—York Refineries, Inc., Newcastle, refinery, **$500,000.**

B. C., Vancouver—PLANT—Canada Wire & Cable Co., Ltd., 1200 Homer St., plant alterations. Approx. **$100,000.**

B. C., Vancouver—WAREHOUSE—Wosk's Ltd., 50-62 W. Hastings St., plans by Ross Lort, 1909 W. Broadway, 4 story, 50x120 ft., rein.-con. warehouse. Approx. **$275,000.**

Ont., Toronto—PLANT—Snap-On Tools of Canada Ltd., Lake Shore Rd., Long Branch, 1 story, steel, brick mfg. plant, Cranfield Rd. Approx. **$100,000.**

▲ **Que., La Tuque** — PLANT IMPRVS., etc. — Brown Corp., La Tuque, forest industry plant imprvs., expansion. Approx. **$1,500,000.**

Que., St. Laurent—FACTORY, etc.—London Gramaphone Corp. of Canada Ltd., 2123 St. Catherine St. E., Montreal, plans by P. F. Goodfellow, 1117 St. Catherine St. W., Montreal, 1 story, bsmnt., structural steel, brick, block factory and offices, concrete fdns. Approx. **$100,000.**

Que., Three Rivers—FACTORY—Beliveau Mfg. Ltd., 9 Jersey St., Cap de la Madeleine, factory in Ste. Marquerite District. Approx. **$175,000.**

UNCLASSIFIED

Arkansas — RURAL DISTRIBUTION LINES — Ozarks Rural Electric Co-operative Corp., Fayetteville, 147 mi. rural distr. line and sys. imprvs., Washington Co. **$265,000.**

Conn., New Britain—STADIUM—City, World War II Memorial Com., New Britain, plans by Mendel Baldessari, 300 Main St., 7,500 to 9,000 capacity rein.-con. all sports stadium. **$500,000.** George Molleur, City Hall, city engr. CD 6/21.

Idaho—RURAL DISTRIBUTION LINES—Northern Idaho Rural Electric Rehabilitation Assoc., Sandpoint, 111 mi. rural distr. lines and system imprvs., Bonner Co. **$400,000.**

Ill., Prairieville—DRIVE-IN THEATER—Prairieville Theatre Corp., c/o A. J. Contos, Sterling Theater, Sterling, 700-car drive-in motion picture theater, Lincoln Hy. at Prairieville corners west of Dixon. **$125,000.** C. K. Willett, c/o owner, consult engr.

Illinois—RURAL DISTRIBUTION LINES—Southeastern Illinois Electric Co-operative, A. F. Lentz, mgr., Harrisburg, adnl. rural distr. lines, other system imprvs., Saline Co. **$415,000.**

Ind., Evansville—THEATRE—Evansville Park Bd., James Newcom pres., plans by Study, Farrar & Majers, Arcade Bldg., 812 Olive St., St. Louis, 1, Mo., outdoor theatre, Mesker Park. **$400,000.**

Ind., Indianapolis—BARN—Indiana State Fair Bd., State Fair Grounds, E. 38 St., plans by Burns & James, 824 Architects & Builders Bldg., 1 story, 114x372 ft., brick, concrete, steel, heavy mill, horse barn addn. $250,000.

Kan., Meade—GRAIN ELEVATOR—Co-operative Elevator & Supply Co., Meade, grain elevator addn. $184,000.

Kentucky—RURAL DISTRIBUTION LINES—Jackson Co. Rural Electric Co-operative Corp., McKee, 350 mi. rural distr. lines, sys. imprvs., Jackson Co. $915,000.

▲ **Md., Baltimore**—RAILROAD—Pennsylvania R. R. Co., L. P. Struble, ch. engr., 30 Station Bldg., Phila., Pa., pier and railroad expansion, $20,000,000.

Mass., Grafton—UTILITY LINES—Commonwealth of Mass., Dpt. Mental Health, 100 Nashua St., Boston, utility lines, steam pipe mains, State Hospital, $100,000.

Mass., Reading—UTILITY LINES—Commonwealth of Mass., Dpt. Pub. Health, 100 Nashua St., Boston, utility lines, incl. reconstr. steam and electric distr. lines, State Hospital, $100,000.

Mississippi—RURAL DISTRIBUTION LINES—Northeast Mississippi Electric Power Assoc., Oxford, 189.5 mi. rural distr. lines, sys. imprvs., Lafayette Co. $510,000. CD 11/21/47.

Missouri—RURAL DISTRIBUTION LINES—Barton Co. Electric Co-operative, Lamar, 182.5 mi. rural distr. lines, sys. imprvs., Barton Co. $410,000.

▲ **Missouri**—RURAL DISTRIBUTION LINES—Black River Electric Co-operative, Ironton, 536 mi. rural distr. lines, sys. imprvs., Reynolds Co. $1,120,000. CD 2/28.

Montana—RURAL DISTRIBUTION LINES—Big Horn County Electric Co-operative, Lodge Grass, 99 mi. distr. lines, sys. imprvs., Big Horn Co. $205,000.

▲ **O., Cleveland**—RAPID TRANSIT SYSTEM—Cleveland Transit System, 1404 E. 9 St., supply engineering services in connection with construction 13 mi. rapid transit sys. $16,000,000. Deleuw Cather & Co., 150 N. Wacker St., Chicago, Ill., consult. engrs. CD 11/2.

▲ **O., Youngstown**—PARKING STRUCTURE—City, City Hall, Boardman and Phelps St., downtown parking structure over Erie R. R. tracks, move tracks further into hillside, 1,800 ft. decked parking structure, Wick to Fifth Aves., 300 ft. wide between Commerce and Wood Sts. $6,000,000. J. E. Greiner Co., 1201 St. Paul St., Baltimore Md., and Parsons, Brinkerhoff, Hall & Macdonald, 51 Broadway, New York 6, N. Y., consult. engrs. CD 11/25.

▲ **South Dakota**—RURAL DISTRIBUTION LINES, etc.—East River Electric Power Co-operative, Sioux Falls, rural distr. lines sys. and generating plant. $11,500,000.

Tex., Beaumont—STADIUM—Beaumont Independent School Dist., Beaumont, plans by H. Voelcker & Assoc. 1202 Dennis St., steel, concrete, heavy timber stadium, $175,000.

Tex., Bonham—TELEPHONE POLES and LINES—Southwestern Bell Telephone Co., 308 S. Akard St., Dallas, reconstruct overhead telephone poles and lines. $150,000.

Tex., McKinney and Paris—TELEPHONE POLES and LINES—Southwestern Bell Telephone Co., 308 S. Akard St., Dallas, reconstruct overhead telephone poles and lines, $200,000.

Tex., Snyder—OIL GATHERING SYSTEM—Pan-American Pipe Line Co., M. Esperson Bldg., Houston, addnl. crude oil gathering sys. in Kelly Pool area. $100,000.

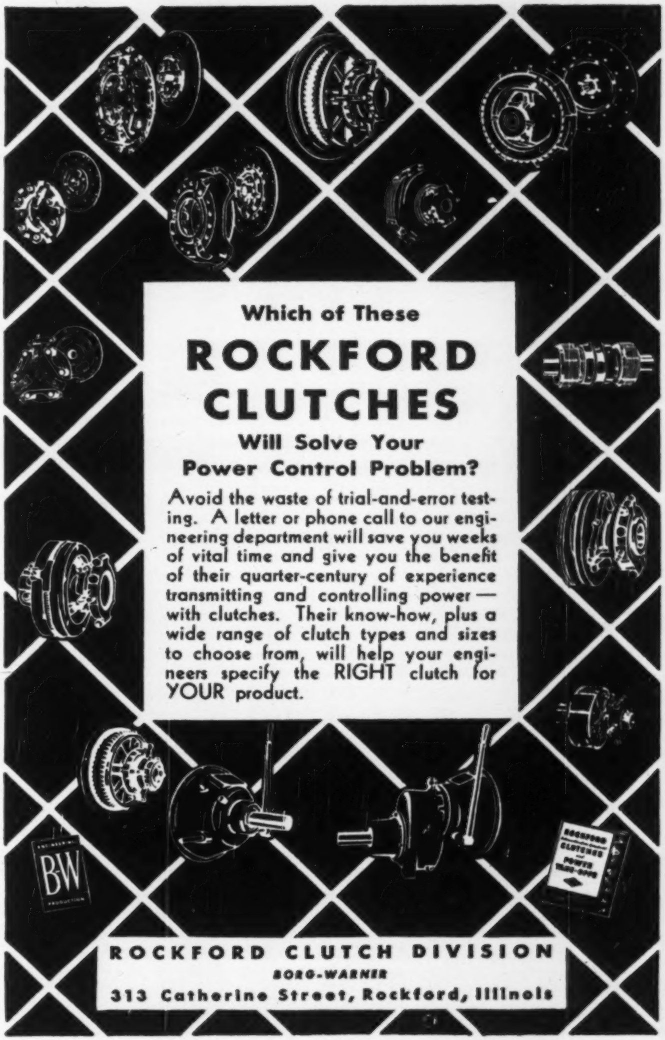
Wash., Camas—PIPELINE—Crown-Zellerbach Corp., Camas, pipeline from pulp plant into Columbia River as alternate plant for disposal of sulphite waste liquor. $250,000.

Ont., Hamilton—PARKING RAMP—Syndicate, c/o Controller H. A. Hicks, City Hall, 374,000 sq. ft., 156x264 ft., parking ramp. $750,000.

Ont., Scarborough—HOCKEY ARENA—Service Groups, c/o R. Lipsett, alderman, 744 Bay St., Toronto, 150x175 ft., 2,000 seating hockey arena, Gerrard St. $300,000.

Ont., Toronto—HOCKEY ARENA—East End Service Organizations, R. Lipsett, 744 Bay St., 150x270 ft. hockey arena at Garrad and Main Sts. Approx. $300,000.

Sask., Regina—AMPHITHEATRE—Regina Exhibition Assn., Regina, amphitheatre. $500,000.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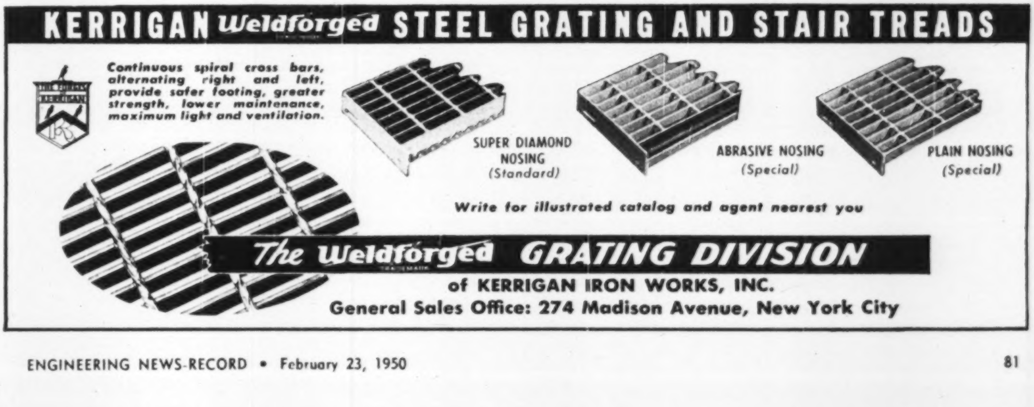
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CONSTRUCTION REPORTS Second Section

WATER SUPPLY

BIDS ASKED

Va., Gate City—B.A. About 3/1—Weber Sanitary Dist. of Scott Co., c/o E. V. Martin, Gate City, and W. B. Sours, Hampton, assoc. engrs., 19 mi., 2-to 8-in. water mains, ¾ m.g.d. filtration plant, etc. Plans deposit $15. CD 2/10.

Ga., College Park—B.A. 3/1—City, extend. distr. system, incl. 19,712 lin. ft. 8 and 12 in. c.i. pipe. Plans deposit $15. Wiedeman & Singleton, P.O. Box 1878, Atlanta, engrs.

▲ **La., New Orleans**—B.A. 3/1—Sewerage & Water Bd. of New Orleans, 526 Carondelet St., Contr. 302-W, reinforced cement-mortar exterior coating to about 8,500 lin. ft. steel pipe of 50.8 in. outside diam., $65,000; Contr. 241-D, 8,400 lin. ft. 20 to 28 ft. rein.-con. lined and covered canal in Orleans Ave., $2,700,000.

Ont., Ottawa—B.A. 3/1—Secy., c/o Canadian Commercial Corp., 70 Lyon St., supplying, erecting one 50,000 U. S. Gal. steel water tank, Naval Radio Station, Gloucestere Twp. Approx. $35,000. Plans deposit $25. R. Blais, Dpt. P. Wks., Hunter Bldg., Ottawa, engr.

Fla., Jacksonville—B.A. 3/2—City, City Hall, water distr. sys., exten., addns. Adv. 2-2532. Plans deposit $25. Reynolds, Smith & Hills, 227 Park St., Zone 1, engrs. CD 5/17/46.

Fla., Jacksonville—B. A. 3/2—City, City Hall, furnishing 2 wells at Fairfax Pump. Station, Adv. No. 2-25-35. Plans deposit $5. Reynolds, Smith & Hills, 227 Park St., Zone 1, engrs. CD 5/17/46.

Mass., Lynn—B.A. 3/2—Commonwealth of Mass., Water Div., Metropolitan Dist. Comn., Wm. T. Morrissey, comr., 20 Somerset St., Boston, furnish, lay 11,700 lin. ft. 36 in. c.i. pipe, Pipe Line Contr. 169. $375,000. CD 11/17/43.

Calif., Porterville—B.A. 3/6—Woodville Public Utillty Dist., Rt. 1, Box 359-C, Porterville, water sys., pumping plant, pressure storage tank. Approx. $28,000. Plans deposit $10. Irvin H. Althouse, Porterville, engr.

LOW BIDDERS

▲ **O., Bowling Green**—City, Clarence Dick, mayor, City Bd. Control, Bowling Green, Jan. 31, water supply sys., Sect. A, low pressure pump. station, from F. H. Taylor Co., 17360 Lahser St., Detroit, Mich., **$78,309**, est. $97,000***Sect. B, water treatment plant from C & C Constr. Co., 2001 E. Pontiac St., Fort Wayne, Ind., **$494,000**, est. $547,000***Sect. C, transmission main, etc. and Sect. D, distr. mains, etc., from Omer Brandon & Son, Ins., 8120 E. Jefferson St., Detroit, Mich., **$382,701**, est. $475,000 and **$96,985**, ets. $137,000 respectively. CD 1/4.

CONTRACTS AWARDED

▲ **Ia., Council Bluffs**—Bd. Waterworks Trustees, Council Bluffs, WW. imprvs., Contr. purification plant, 16, to Larson Bros. Constr. Co., 10 N. Main St., **$1,187,419**; Contr. 21, feeder main, to Quad City Constr. Co., 123-21 Rear St., Rock Island, Ill., **$106,213**. Bids 1/31. CD 2/6, under LB.

▲ **Puerto Rico**—Puerto Rico Aqueduct and Sewer Auth., Santurce, construct gravity concrete Rio Grande de Loiza Dam, power house structure, pumping stations substructure, furnishing tainter gates with electrical equip. and control units, hydraulic turbines, generators and auxiliary equip., appurtenances, to Sumner S. Sollitt & Co., 307 N. Michigan Ave., Chicago, Ill., **$2,131,600**. Bids 1/23. CD 2/1, under LB.

SEWERS, WASTE DISPOSAL

BIDS ASKED

N. Y., Brooklyn—B.A. 2/27—President Brooklyn Boro, Boro Hall, Zone 2, combined sewers east of access road of Brooklyn-Queens Connecting Hy. from Woodhull to Rapelye Sts., designated as Sect. B, of Contr. 2 of Brooklyn-Queens Connecting Hy. CD 8/31/45, under Streets and Roads.

▲ **La., New Orleans**—B.A. 3/1—Sewerage & Water Bd., 526 Carondelet St., Contr. 241-D, constr. approx. 9,400 lin. ft. 20 to 28 ft. rein.-con. lined and covered canal in Orleans Ave. and N. Jefferson Davis Parkway to Pumping Station 7, $2,700,000. Plans deposit $5. CD 4/17.

O., West Union—B.A. 3/1—Village, M. C. Wolfe, mayor, City Bldg., sewerage sys. and disposal plant, 50,960 lin. ft. vitr. clay sanitary sewers; 4 lift stations, imhoff tank, drying beds, dosing tanks, trickling filters, etc. settling tank, water service, electrical. $230,470. Plans deposit $10. Alden E. Stilson & Assoc., 209 E. High St., Columbus, engrs. CD 12/5.

Conn., New Britain—B.A. 3/2—City, P. Wks. Dpt., City Hall, sanitary sewers, lateral sewers various streets 12 mi. sewer lines. George Molleur, city engr. CD 8/2/45.

Conn., Plainville—B.A. 3/2—Town, 29 Pierce St., Contr. 7, East and West Sects. Sewerage System; Contr. 7A, West Sect. alone; Contr. 7B, East Sect. alone. Plans deposit $15. Bowe, Albertson & Assoc., 110 William St., New York, N. Y., engrs.

Ill., Chicago—B. A. 3/2—Sanitary Dist. of Chicago, 910 S. Michigan St., South Side Intercepting Sewer, Contr. 5 and Racine Ave. Pumping Station, Div. K combined. Plans deposit $100. Bids 1/26 cancelled. CD 1/19.

N. J., Cedar Grove—B.A. 3/6—Cedar Grove Twp., Municipal Bldg., Pompton Ave., sanitary sewers, Contr. 1 A. Plans deposit $25. Havens & Emerson, Woolworth Bldg., 233 Broadway, New York 7, N. Y., consult. engrs. CD 12/20/45.

La., Ville Platte—B.A. 3/7—Gravity Sub-Drainage Dist. 1 of Ville Platte, c/o Pan American Engineers, engrs., 1418 Third St., Alexandria, storm drainage sys., incl. concrete culverts, concrete line canal, and installing concrete pipe, Plans deposit $5.

N. D., Zap—B.A. 3/7—City, sewerage sys. $60,000. L. W. Veigel, Dickinson, engr.

† **Tenn., Oak Ridge**—B.A. 3/7—U. S. Atomic Energy Comn., P. O. Box 3, Attention, R. J. Dunbar, Engr. Div., Oak Ridge, Sewage Treatment Plant Bldg. 11, Inv. No. 401-50-7A. Plans deposit $15.

CONTRACTS AWARDED

▲ **Mich., Detroit**—Dpt. P. Wks., City Hall, Contr. PW-998 to 1001 (inclusive) approx. 4.9 mi. sewer under Livernois and Dragoon Ave., and rights-of-way, from Joy Rd. to Detroit River at Fort Wayne, to S. A. Healy Co., 6561 E. Seven Mile Rd., and Gargaro Co., Inc., 40 E. Seven Mile Rd., **$5,587,000**. Bids 1/31. CD 2/2, under LB.

▲ **Pa., Norristown**—Norristown Boro, Norristown, secondary sewage treatment plant addn., alterations, to Robert E. Lamb & Son, Inc., 3420 W. India Ave., Phila., **$1,307,529**. Bids 1/24. CD 2/1, under LB.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

February 28
Kansas
Maryland
Massachusetts
North Carolina

March 3
Alabama
Minnesota
North Dakota
Pennsylvania

Tennessee
Wisconsin
March 7
Maryland
March 8
California
Missouri
March 9
New Jersey
March 29
New York

New Jersey and Pennsylvania—B.A. 3/2—Delaware River Joint Toll Bridge Comn., Broad St. Bank Bldg., Trenton, N. J.

Mercer Co., N. J. and Bucks Co., Pa.—flooring bridge over Delaware River, Wilburtha, N. J., and Yardley, Pa., $65,000, Edw. J. Denzler Jr., owner's ch. engr.

Tex., Fort Worth—B.A. 3/9—City, W. O. Jones, mgr., City Hall, (1st unit) four-lane underpass under T. & P. R. R. tracks, University Dr., from Crestline Rd. to Park Hill Dr. $250,000. Total cost $631,000. Tentative date. C. M. Thelin dir. Pub. Wks. CD 1/30.

Fla., Miami—B.A. 3/21—Dade Co., Courthouse, single leaf skew bascule bridge, approaches S.E. 4 Ave. over Miami Canal. $500,000. Plans deposit $25. Rader, Knappen Trippetts Eng. Co., 1615 Dupont Bldg., engr. CD 11/9/44.

Ont., Sudbury—B.A. 5/15—Municipality, subway at Lorne St. **$325,000**. Canadian Pacific R.R., Windsor Station, Montreal, Que., archt. and Malcolm D. Stewart, City Hall, city engr.

LOW BIDDERS

Minnesota—State Hy. Dpt., St. Paul, Feb. 3, 9 beam span 611 lin. ft. bridge 5589 over Great Northern and Minneapolis & St. Louis Ry. tracks in City of Minneapolis, S. P. 2715-04 (T. H. 12-107), from H. H. Mass Constr. Co., Algonquin, Ill., **$600,042**, CD 1/19.

CONTRACTS AWARDED

▲ **New Jersey**—New Jersey Turnpike Auth., 65 Prospect St., Trenton, Zone 8, Contr. 2, furnishing, placing, compacting various graded borrow excav. materials in embankments, stabilizing existing ground by use of vertical sand drains, excavating portions embankment placed as overload and depositing materials so excavated on embankment to excavating ditches for mosquito control, etc. in constr. of Turnpike from north abutment proposed Passaic River structure to south abutment proposed Hackensack River structure Kearny, Hudson Co., to George M. Brewster & Son, Inc., 275 W. Fort Lee Rd., Bogota, **$1,184,050*****Contr. 5, two river piers, foundations fenders, etc. in connection with constr. of Passaic River bridge Newark and Harrison, Essex and Hudson Counties, to Underpinning & Foundation Co., 155 E. 44 St., New York, N. Y., **$680,285*****Contr. 6, four river piers and two fenders in connection with constr. of turnpike across Hackensack River, Laurel Hill, Hudson Co., to R. B. Baggard Eng. Co., Westmont, **$1,226,910**. Grand total $3,091,245. Bids 1/31, awarded 2/15. CD 2/2, under LB.

▲ **New York**—Bureau Contracts & Accounts, Albany, elimination grade crossings in city of Rochester between tracks of New York Central and Baltimore & Ohio Railroads and Hague, Ames, York, Colvin and Childs Sts. incl. change in track grade line, construct two 46 ft. span I-beam bridges and 3 pedestrian underpasses, construct 0.59 m. b. conc. paving on Ames and Childs Sts., PSC. 4763, 5938, Monroe Co., to Bates & Rogers Const. Corp., 600 W. Jackson St., Chicago, Ill., **$1,366,479**. Bids 12/28. CD 12/30, under LB.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

February 28
Kansas
Maryland
Minnesota
North Carolina
Ohio
March 3
Alabama
North Dakota

Pennsylvania
Tennessee
Wisconsin
March 7
Massachusetts
March 8
California
March 9
California

March 14
Texas

Minn., Mankato—B.A. 3/8—Blue Earth Co., B. E. Lee, aud., grav. surf. 5 mi. between Mapleton and south line of Blue Earth Co., S. P. 07-508-02 (SAR 7), Proj. S-358 (2); grav. base 4.3 mi. between south Junction (SAR 10) and Junction CAR 133, S. P. 07-502-05 (SAR 20), Proj. S 76 (3), Approx. $50,000, Plans deposit $1.45, and $1.10, R. C. Deegan, c/o hy. engr.

N. Y., Brooklyn—B.A. 3/10—New York City Housing Auth., 63 Park Row, New York, Zone 7, c. conc. paving for walks and concrete curbs at Fort Greene Houses, at Prince St., Carlton, Myrtle and Park Aves., Brooklyn Boro, Contr. No. GR 49-27. Plans deposit $25.

† **N. M., Las Cruces**—B.A. About 3/13—U. S. Eng., P.O. Box 1538, Albuquerque, roads and utilities for U. S. Naval Unit (White Sands P. G. NAV-92, NAV-93 and NAV-914), Serial No. Eng-29-005-50-34.

† **New Mexico**—B.A. 3/15—Bureau Reclamation, Dpt. Interior, El Paso, Tex., reconstruction and paving 1.8 mi. road at Elephant Butte Dam and 1.3 mi. road at Caballo Dam, near Hot Springs, Spec. R5-EP-2 (Region 5), Rio Grande Proj.

† **Oklahoma**—B.A. About 3/22—U. S. Eng., P. O. Box 61, Tulsa, relocation Oklahoma State Hy. 99, Hulah Dam, Caney River CIVENG-34-066-50-87. CD 1/10.

† **Wash., Arlington**—B.A. 3/24—Pub. Wks. Officer, 13 Naval Dist., 1611 W. Wheeler St., Seattle, access road 6 mi. to Blue Mountain at site of Jim Creek Naval Communication Station, Specs. 23497. Plans deposit $10. CD 7/2/47.

LOW BIDDERS

▲ **Massachusetts**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Feb. 7, state hy. and bridge constr., Federal aided Proj. F-256 (9), Sutton, Northbridge, Douglas and Uxbridge, from S. & M. Constr. Co., 450 Manton Ave., Providence, R. I., **$778,852*****state hy. constr., Littleton, Boxborough and Acton, from Peter Salvucci, 55 Pont St., Waltham, **$957,946*****hy. and br. constr., Federal aided Proj. U-336(3), Contr. A, from Thomas Bros., Middleboro, **$607,655**. CD 1/18.

▲ **New Jersey**—New Jersey Turnpike Auth., 65 Prospect St., Trenton, Zone 8, Feb. 7, Contrs. 3, 3A and 3B, grading, drainage structures etc. in connection with constr. New Jersey Turnpike, Sect. 1 between Deepwater and Woodbury, Salem and Gloucester Counties, from Nello L. Teer Co., Trust Bldg., Durham, N. C., **$2,083,428**. CD 1/18.

CONTRACTS AWARDED

Maine—State Hy. Comn., Augusta, bit. grav. 3.5 mi. Federal Aid Proj., FI 23(9), Pembroke and F 5(3), Pembroke and Perry Counties, to Thomas DiCenzo, Calais, Me., **$232,469**, Bids 2/8, CD 1/30.

Massachusetts—Commonwealth of Mass., Dpt. P. Wks., Boston, hy. Rte. 2, Littleton, Boxborough, Acton, to Peter Salvucci, 55 Pond St., Waltham, **$957,946**, Bids 2/7, awarded 2/10, CD 2/14.

† **Mississippi**—Bureau Pub. Rds., Dpt. Commerce, First National Bank Bldg., Florence, Ala., imprv. 22,264 mi. Natchez Trace Parkway, Proj. 3M9-3N7, Madison and Leake Counties, to Forcum-James Co., Box 4816-North Station, Memphis, Tenn., **$555,027**. Bids 2/1. CD 2/7, under LB.

▲ **Alaska**—RAILROAD IMPRVS.—Alaska Railroad, Dpt. Interior, Anchorage, 244 mi. Alaska Railroad imprvt. proj., incl. raising, wid'n. embankments, renewing ties, replacing culverts, etc., 30 mi. each between Potter and Anchorage, Matnuska and Kashwitna, Caswell and Curry, Colorado and Cantwell, Healy and Clear, Nenana and Fairbanks, to Brown & Root, Inc., Box 3, Houston, Tex., and Wm. A. Smith Contg. Co., 1401 Fairfax Trafficway, Kansas City, Mo., **$6,845,068**. CD 2/14, under CA.

EARTHWORK, WATERWAYS

BIDS ASKED

† **Illinois and Missouri**—B.A. 2/28—U. S. Eng., P. O. Box 97, Memphis, Tenn., bank protection work on Mississippi River between Cairo, Ill., (Mile 966AHP) and Cottonwood Point, Mo., (Mile 835 AHP), Serial No. CIVENG-40-041-50-75.

† **Illinois**—B. A. 2/28—U. S. Eng., 826 U. S. Court House and Custom House, 1114 Market St. St. Louis 1, Mo., concrete floodwall East Side Levee and Sanitary District, Proj. Item I-D(1) St. Clair Co., along east bank of Mississippi in vicinity of East St. Louis incl. placing rein.-con. in floodwall and closure structure, steel sheet piling, three 18 in. sluice gates, subdrainage system, etc., Inv. No. CIVENG-23-065-50-74. Extended date. CD 2/2.

† **Illinois**—B.A. 2/28—U. S. Eng., 808 U. S. Courthouse and Customhouse, St. Louis 1, Mo., constr. hy. closure structures, Stringtown, Ft. Chartres and Ivy Landing, Drainage and Levee Dists. (Proj. Item III-D) Prairie Du Rocher, Illinois and vicinity (Proj. Item

(Continued on page 84)

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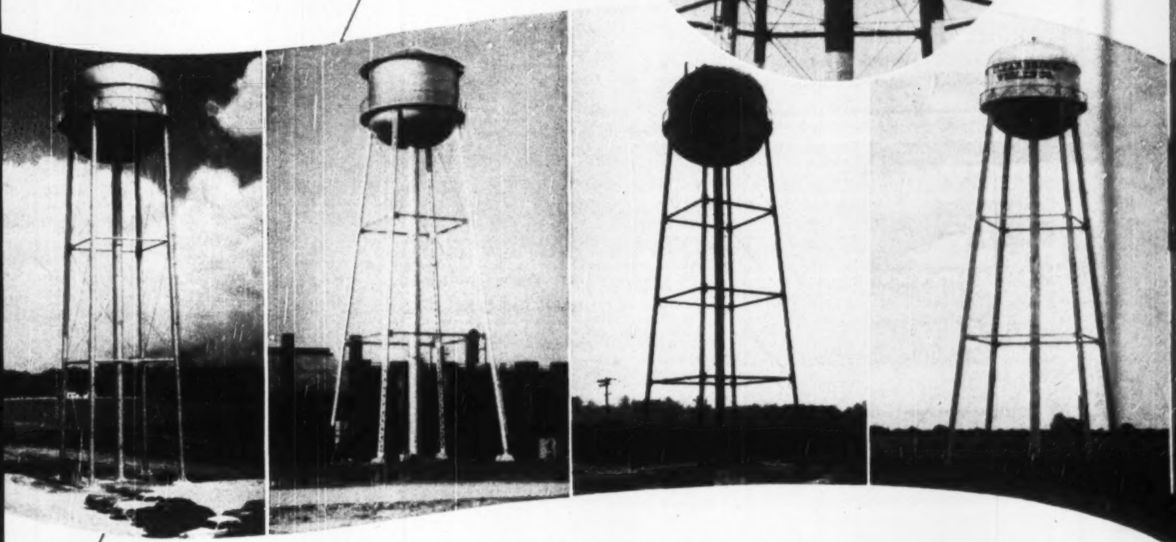

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(Continued from page 82)

I-D) (Edgar Lakes and Prairie Du Rocher and Modoc Drainage and Levee Dists., Randolph Co., on opposite banks of Prairie Du Rocher Creek and in vicinity of Prairie Du Rocher, CIVENG 23-065-50-79. CD 2/10.

† **Missouri**—B.A. 2/28—U. S. Eng., 1709 Jackson St., Omaha, Neb., Agricultural Levee Unit L-550, Sects. 2 to 9 (inclusive) along left bank of Missouri River, from mouth of Nishnabotna River to Brownville Bridge, near Phelps City, Atchison Co., Serial No. CIVENG 25-066-50-23. CD 1/30.

† **Nebraska**—B.A. 2/28—Bureau Reclamation, Dpt. Interior, Superior, earthwork and structures for Superior Canal, station 1083 plus 00 to end station 1628 plus 09.75, drains, channel changes and terminal wasteway, Missouri River Basin Proj., Bostwick Div., Spec. 2895. Extended date. CD 1/23.

† **New York**—B.A. 2/28—U. S. Eng., 80 Lafayette St., New York, Zone 13, maintenance dredging Newtown Creek, No. Eng-30-075-50-70, Queens Co. CD 1/12.

† **Virginia**—B.A. 2/28—U. S. Eng., foot of Front St., Norfolk, clearing Parcels B, C, and D, Buggs Island Reservoir Proj., Roanoke River, Serial No. CIVENG-44-110-50-50. CD 1/26.

† **Illinois**—B.A. 3/1—U. S. Eng., St. Louis Dist., U. S. Courthouse & Customhouse, St. Louis 1, Mo., constr. Chouteau, Nameoki and Venice Pumping Station, Chouteau, Nameoki and Venice Drainage & Levee Dist., Proj. Item I, Madison Co., on east side of Chain of Rocks Diversion Canal opposite Station 272 plus east 00, about 2 mi. east of Chain of Rocks Toll Bridge over Mississippi River Mile 191 above mouth of Ohio River, CIVENG 23-065-50-77. Extended date. CD 1/16.

† **Maine**—B.A. 3/1—U. S. Eng., New England Div., Army Base, Boston 10, Mass., dredging, Cape Portpoise Harbor, Kennebunkport, CIVENG 19-016-50-42, C. E. Adams, div. engr. CD 6/9/44.

† **Kentucky**—B.A. 3/1—U. S. Eng., P. O. Box 59, Louisville, furnishing, del. sluice gates, accessories for flood protection, Louisville and Covington. CIVENG-15-029-50-57. Extended date. CD 1/27.

Mich., Traverse City—B.A. 3/1—John C. Norton & Assoc., engrs., 415 Fifth St., Traverse City, bulkhead, Greilickville Harbor, for Elmwood Twp., Leelanau Co., near here.

† **New Jersey**—B.A. 3/1—U. S. Eng., 80 Lafayette St., New York 13, N. Y., dredging approx. 52,500 cu. yd. all material except ledge rock from Shoal Harbor and Compton Creek, CIVENG-30-975-50-73.

New Jersey—B.A. 3/2—At office Spencer Miller, Jr., comr. State Hy. Dpt., State House Annex, Trenton, channel dredging in Barnegat Bay in vicinity of New State Hy. Rte. 37 Bridge, Dover Twp., Ocean Co.; channel dredging in Manasquan River in vicinity of new State Hy. Rte. 35 Bridge, Brielle and Point Pleasant Boros, Monmouth and Ocean Counties. Plans deposit $10.

† **New Mexico**—B.A. 3/2—Bureau Reclamation, Dpt. Interior, Fort Sumner, constructing Fort Sumner Diversion Dam, Fort Sumner Proj. 5 mi. northwest of Fort Sumner, Spec. 2906. CD 9/7/44.

† **Louisiana**—B.A. 3/3—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, channel imprvs. incl. clearing, snagging, Mile 0 to Mile 4.5, Selser's Creek, Tangipahoa Paris, CIVENG 16-047-50-211. CD 6/26/46.

Ont., Granton—B.A. 3/3—F. Hudson, clk. Biddulph Twp., R.R. 3, excavation 54,660 cu. yd. for 40,700 ft. open drain. Approx. $28,000.

Neb., Stanton and Pilger—B.A. 3/6—Stanton-Pilger Drainage Dist., Charles Barth, secy., Stanton, drainage pilot channel vicinity of here $57,112. Henningson Eng. Co., Standard Oil Bldg., Omaha, engrs.

† **Idaho**—B.A. 3/7—Bureau Reclamation, Burley, furnishing, installing 3 pumping units, North Side Pumping Division, Minidoka Proj., located approx. 7 to 10 mi. north and northwest of Rupert, Spec. R1-69.

Louisiana—B.A. 3/7—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, reservation bldgs., appurtenances, for Calcasieu Lock, Inv. 50-212, CD 6/26/46.

† **North Dakota**—B.A. 3/8—U. S. Eng., Fort Lincoln, Box 300, Bismarck, planting trees, shrubs and vines, Riverdale. Serial No. CIVENG-32-015-50-55. CD 6/1/44.

LOW BIDDERS

▲† **Arkansas**—U. S. Eng., P. O. Box 60, Vicksburg, Miss., Feb. 9, constr. Blakely Mountain Dam, and intake structure on Ouachita River, Garland Co., approx. 2 mi. west of Mountain Pine and 10 mi. northwest of Hot Springs, from Engineering Constr. Co., Dallas Natl. Bank Bldg., Dallas Tex., **$4,167,770**. CD 12/30.

† **Kentucky**—U. S. Eng., Huntington Dist., Madison Ave. and 8 St.W., Huntington 18, W. Va., Feb. 7, local protection Proj., Sect. 2, incl. approx. 4,400 ft. earth levee, approx. 3,600 ft. 27-to 54-in. interceptor sewers, and 8x8 ft. culvert about 325 ft. long, 2 concrete gate walls, in City of Maysville, Mason Co., along left descending bank of the Ohio River, CIVENG 46-022-50-65, from The W. L. Harper Co., Highland near Lester Sts., Cincinnati, O., **$567,349**. CD 1/12.

† **Maryland**—U. S. Eng., 24 St. and Maryland Ave., Baltimore, Zone 18, Feb. 7, maintenance and imprv. dredging Brewertown and Fort McHenry Section, Patapsco River, located about 3 statute miles and 7 statute miles respectively southeast from Fort McHenry, Baltimore and Riverview Anchorage 2, adjacent to area to be dredged in Fort McHenry Section, CIVENG 18-020-50-16, from Arundel Corp., Pier 2, Pratt St., Baltimore, Sect. 1, **$516,000**; Sec 1A, **$672,080**; Sec 1B, **$661,240**, CD 1/11.

† **Nebraska**—Bureau Reclamation, Dpt. Interior, Superior, Feb. 2, Schedule 1, earthwork and construction precast-concrete siphons and turnout and waste-way channel. Schedule 2, earthwork of canal sect. incl. intercepting drains and channel changes, and earthwork and construction of timber bridges, precast-concrete culverts and turnouts, overchutes, drainage inlets and checks, Schedule 3, earthwork of canal sect. and channel changes, and earthwork and construction-timber bridges, concrete check, drainage inlets, precast-concrete turnouts and metal culverts for Superior Canal, station 659 plus 68.2 to 990 plus 80 and 1029 plus 48.17 to 1083 plus 00, Spec. 2863, Missouri River Basin Proj., Bostwick Div., from Ace Constr. Co., 2110 S. 55 St. Omaha, **$227,073**. Est. $317,078. CD 1/25.

† **Oregon**—U. S. Eng., Pittock Block, Portland, Feb. 7, design, manufacture, deliver at Gates, 4 assemblies outlet gates, appurtenances for Detroit Dam, Detroit, Marion Co., CIVENG-35-066-50-182, from Williamette Iron & Steel Co., 2860 N. W. Front St., Portland, **$356,938**. CD 1/27.

▲† **Tennessee**—U. S. Eng., U. S. Courthouse, P. O. Box 1070, Nashville, Zone 1, Feb. 14, construct Cheatham Lock on Lower Cumberland River, Serial No. CIVENG-40-058-50-29, from T. L. James & Co., Inc., Ruston, La., and Stevens Bros. and Miller-Hutchison Co., Inc., 730 Gravier St., New Orleans, La., **$4,975,259**. Est. $6,913,359. CD 1/12.

▲† **Washington**—Bureau Reclamation, Dpt. Interior, Ephrata, Feb. 2, earthwork, concrete lining and structures station 1410 plus 00 to station 2090 plus 75 East Low Canal and station 0 plus 00 to station 173 plus 65, Weber wasteway Columbia Basin Proj., near Moses Lake, Spec. 2879, from Western Constr. Corp., 400 Benson Bldg., Sioux City, Ia., **$1,649,982**, Est. $2,073,000. CD 12/29.

▲† **Washington**—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, Feb. 10, design, mfg. and delivery first ten 100,000 hp. hydraulic turbines for Chief Joseph Dam, Bridgeport, Inv. 50-44, from Newport News Shipbuilding & Drydock Co., Newport News, Va., **$6,222,320**. CD 12/19.

CONTRACTS AWARDED

▲† **Arizona**—Bureau Reclamation Dpt. Interior, Yuma, earthwork, tunnel, canal lining and structures for Wellton-Mohawk Canal, station 456 plus 00 to 969 plus 65 Gila Proj., Spec. 2822, to Morrison-Knudsen Co., Inc., 319 Broadway, Boise, Idho, **$1,556,388**. Bids 12/6. CD 12/15, under LB.

▲ † **California**—U.S. Eng., 751 S. Figueroa St., Los Angeles, Los Angeles River Imprvit., Whitsett to Fulton Aves., Los Angeles Co., CIVENG-04-343-50-16, to A. Teichert & Sons, Inc., Box 436, North Hollywood, **$1,069,283**. Bids 1/18, awarded 2/10. CD 1/23, under LB.

† **Kentucky**—U. S. Eng., 8 W. Broadway, Louisville, flood protection works Section B, Covington, CIVENG-15-029-50-42, to W. L. Johnson Constr. Co., Shook Rd., Columbus, O., **$822,852**, Bids 1/10 awarded 1/18. CD 1/16, under LB.

† **Washington** — Bureau Reclamation, Dpt. Interior, Coulee Dam, clearing 27,500 acres equalizing reservoir between North Coulee and South Coulee dams, Columbia Basin Proj., Spec. 41-CB-34 (Region 1), to J. W. Hardison, Yahima, **$348,963**. Bids 1/4, awarded 2/2. CD 12/6.

▲† **Washington**—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, excavation of powerhouse intake channel at Chief Joseph Dam site and relocation of 1.21 mi. State Hy. No. 10-B adjoining the channel, Bridgeport, CIVENG 45-108-50-40, to General Constr. Co., 2840 Iowa Ave., Seattle, **$2,265,325** Bids 1/18. CD 1/23, under LB.

▲† **Alaska**—U. S. Eng., (AP0942, c/o PM, Seattle, Wash.), Anchorage, dredging Wrangell Narrows, CIVENG 45-108-50-35, to Puget Sound Bridge & Dredging Co., 2929 16 Ave. S.W., Seattle, Wash. **$1,023,305**. Bids 1/17. CD 1/23, under LB.

▲ **N. B., Saint John**—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., dredging 2,072,000 cu. yd. Courtenay Bay, to Saint John Dry Dock & Dredging Co., Ltd., Bayside Dr., **$1,823,360**. Bids 2/1. CD 2/7, under LB.

AIRPORTS

BIDS ASKED

Ga., Atlanta—ADMINISTRATION BLDG.—B.A. 3/1—Fulton Co., administration bldg. at Fulton County Airport, $50,000. Percy H. Perkins, Jr., Forsythe Bldg., archt. CD 6/28/45.

† **Alaska**—AIRPORT—B.A. 3/10—Alaska Aeronautics Comn., Glover Bldg., Anchorage, airport at Dillingham and/or airports at Ninilchik, Skagway, Fort Yukon, Seldovia and Kotzebue. Approx. **$50,000**. Plans deposit $25. CD 2/6, under Alaska, Seldovia.

LOW BIDDERS

† **O., Dayton**—SCAVENGING BLDG.—U. S. Eng., 830 W. Broadway, Louisville 3, Ky., Feb. 7, scavenger bldg., at Wright-Patterson Air Force Base, Serial No. Eng-15-029-50-21, from Simpson Const. Co., 1113 S. Hermitage St., Chicago, Ill., **$295,209**. Est. $305,855. CD 1/5.

CONTRACTS AWARDED

† **Calif., Muroc**—TEST STRUCTURES—U. S. Eng., 751 S. Figueroa St., Los Angeles, test structures, appurtenances at rocket engine test station, Muroc Air Force Base, Eng. 04-343-50-10, to Vinnell Co., Inc., 1145 Westminster Ave., Alhambra, **$984,263**. Est. $1,500,000. Bids 1/24, awarded 2/1. CD 2/1, under LB.

Ore., Portland—AIRPORT—Port of Portland, Spaulding Bldg., Feb. 10, clearing, grading, draining, paving

Portland-Columbia municipal airport, from Warren Northwest, Inc., 9860 N. E. Hancock Dr., **$744,951.** Est. $1,000,000. John W. Cunningham, Spaulding Bldg., engr.

▲ R. I., **Smithfield**—AIRPORT—State and Providence Plantation, State House, Providence, Feb. 8, airport, Proj. No. 9120-42. North Central Airport, Smithfield-Lincoln from M. A. Gammino Constr. Co., 728 Valley St., Providence, **(A) $1,201,885 (B) $1,099,202.** CD 1/10.

LATIN AMERICA

Mexico, Coyuca de Catalan—Mexican Govt., Sria. de C. y O. P., Mexico, D. F., river bridge to Cia Constructora Industrial, S. A., Balderas, 96-101-04, Mexico, D. F., Approx. **$125,000. Awarded 2/6.** CD 12/15.

PUBLIC BUILDINGS

BIDS ASKED

Ga., Baxley—HOSPITAL—B.A. 2/28—City and Appling Co., Baxley, hospital. Abreu & Robescn, 22 Marietta St. Bldg., Atlanta, archts. CD 8/15.

Ga., Sylvania—HOSPITAL—B.A. 2/28—At Office County Commissioner's Office, Screven County Hospital Auth., Sylvania, 34 bed hospital. Plans deposit $50. Willis Irvin & Helen Irvin, Assoc., 722 Green St., Augusta, archts. CD 9/16.

Ia., Sioux Center—PLANT—B.A. 2/28—City, Citty Hall, power plant addn., incl., diesel ower generating equipment, switch board, etc., $75,000. Buell & Winter, 508 Insurance Exchange Bldg., engrs. CD 7/18/47.

▲ **Mass., Gardner**—HOSPITAL—B.A. 2/28—Commonwealth of Mass., Dpt. Mental Health, 15 Ashburton Pl., Boston, admission bldg., P-M 20 Contr. 1, Gardner State Hospital, $1,750,000. Plans deposit $25. CD 1/27.

▲ **Mich., Northville**—ADMINISTRATION—B.A. 2/28—State Dpt. Admin. Bldg., Div., 115A State Office Bldg., Lansing, masonry, rein.-con. administration bldg. for Northville State Hospital, $2,000,000. Plans deposit $100, O'Dell, Hewlett & Luckenback, 2300 Dime Bldg., Detroit, archts. E. R. Little Co., 1806 Kales Bldg., Detroit, engr. CD 10/4.

Minn., Rochester—PLANT—B.A. 2/28—State Dpt. Admin., P. T. Peterson, dir. purchases, 19 State Capitol, St. Paul, furnish, install electrical equipment, power plant and bldg. Proj. 958, State Hospital. Approx. $68,000. Plans deposit $30. CD 10/17/47.

O., Troy—SCHOOL—B.A. 2/28—Bd. Educ., Troy, Kyle School, Plum and Simpson St. and razing of old school there. CD 12/19.

▲ **Kan., Great Bend**—SCHOOL—B.A. about 3/1—Bd. Educ., high school, $1,250,000. Lorentz Schmidt, McVay & Peddie, 1832 2 St., Wichita, archts. CD 7/19/49.

N. C., Raleigh—BUILDING—B.A. about 3/1—State Bd. Pub. Bldgs. & Grounds, George B. Cherry, supt., Raleigh, building for State Bd. Health. $600,000. Wm. H. Deitrick, Hargett St., archt. CD 9/29.

O., Kent—HEATING PLANT—B.A. About 3/[illegible]—Dpt. P. Wks., S. O. Linzell, dir., Columbus, enlarge Kent State University heating plant, incl. installation of 600 hp. boiler: $140,000.

S. C., Clemson—CHEMISTRY—B.A. About 3/[illegible]—Clemson Agricultural College, Clemson, chemistry bldg. Approx. $250,000. Hopkins & Baker, Florence, archts. CD 9/12/46.

Ill., Park Ridge—SCHOOL—B.A. 3/1—School Dist. 79, Fairview and Albion Sts., 1 story, steel, concrete, stone school, $250,000. Wm. F. McCaughey, 3 S. Prospect St., archt.

Mass., Natick—HOUSING—B.A. 3/1—Town of Natick Housing Auth., 12 Main St. 52 unit veterans housing, Forest Ave., Curve and High Sts. $545,000. Plans deposit $50. St. John Smith, 687 Boylston St., Boston, archt. Gordon MacNeil, Middleboro, engr. CD 4/14.

Mass., Upton—SCHOOL—B.A. 3/1—Town, Donald B. Johnson, chn. School Bldg. Comn., Upton, brick, glass

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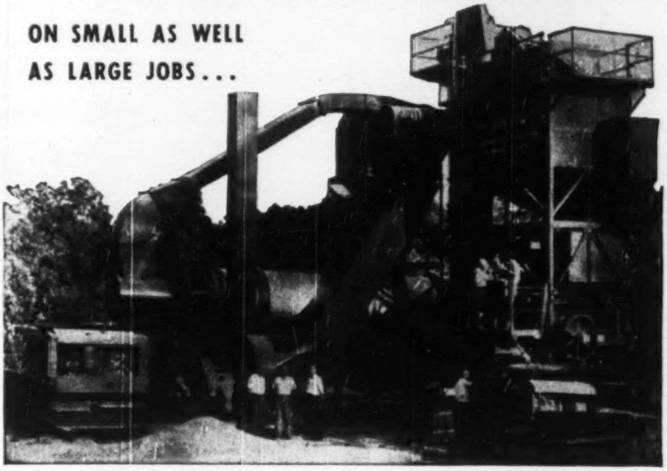

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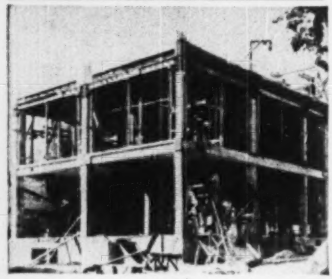

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block, steel, Upton Memorial School, $250,000. Plans deposit $50. CD 12/19.

Minn., Elbow Lake—POWER PLANT—B.A. 3/1—Village, A. W. Roettiger, clk., municipal diesel electric generating and distr. plant, and power bldg. $280,000. Plans deposit $20. E. B. Croft, 3453 Aldrich Ave. S., Minneapolis, archt. General Eng. Corp., 2950 Chicago Ave., Minneapolis, engrs. CD 9/30

† **N. Y., Brooklyn**—HOSPITAL IMPRVS.—B.A. 3/1—U. S. Eng., 80 Lafayette St., New York, Zone 13, topsoiling, seeding, planting at Veterans Hospital, Fort Hamilton. CD 1/26.

N. Y., Cambridge—SCHOOLS—B.A. 3/1—School Dist. 10, Cambridge School, Cambridge, elementary and high school. $935,000. Plans deposit $50. Ryder & Link, 122 Jay St., Schenectady, archts. CD 11/16.

Alta., Edmonton—NURSES HOME—B.A. 3/1—G. H. N. Monkman, deputy minister c/o Dpt. P. Wks., Edmonton, nurses home addn. of University of Alberta Hospital. Approx. $250,000. Plans deposit $50. G. H. MacDonald, 834 Tegler Bldg., archt.

S. D., Brookings—AGRICULTURAL HALL—B.A. After 3/1—State of South Dakota, c/o Dean W. Loucks, state engr., Pierre, agricultural hall State College of Agricultural and Mechanical Arts. $800,000. Plans deposit $15. Perkins & McWayne, 320 Paulton Bldg., Sioux Falls, engrs. and archts. CD 3/27/47.

Ark., Russellville—ARMORY—B.A. 3/2—State National Guard, Little Rock, armory. Plans deposit $25. Wittenberg, Delony & Davidson, Pyramid Bldg., Little Rock, archts. CD 11/16.

Ark., Texarkana—HIGH SCHOOL—B.A. 3/2—Texarkana Bd. Educ., Texarkana, masonry Booker T. Washington High School, gymnasium and cafeteria, $475,000. Plans deposit $25. Reinheimer & Cox, 411 Texarkana Natl. Bank Bldg., Texarkana, Tex., archts.

Fla., Jacksonville—GARAGE, etc.—B.A. 3/2—City, City Hall, erecting and exten. city garage, warehouse and garage office bldg., Adv. No. 2-25-34. Plans deposit $10. A. Eugene Cellar, 1213 Graham Bldg., archt. Clyde E. Harris, 801 Mary St., archt. CD 2/6/45.

Minn., St. Paul—HOME ECONOMICS—B.A. 3/2—University of Minnesota, R. S. Callaway, purch. agt., 323 Admin. Bldg., Main Campus, 3 story, home economics bldg., St. Paul campus, $600,000. Plans deposit $50. C. H. Johnston, 715 Empire Bank Bldg., archt. CD 10/28.

N. Y., New York—ENCUMBRANCE—B.A. 3/2—Dpt. P. Wks., Municipal Bldg., Zone 7, general constr., plumbing; heating and ventilating for construction encumbrance bldg., 134-146 Madison St. Plans deposit $25.

O., Bexley—SCHOOL— B. A. 3/2—Bd. Educ., L. M. Krumm, clk., 326 S. Cassingham Rd., Montrose School alterations. Sims, Cornelius & Schooley, 2901 N. High St., Columbus, archts. and engrs. CD 11/11/48.

O., Painesville—HIGH SCHOOL—B.A. 3/2—Painesville Bd. Educ., 167 W. Washington St., Harvey High School addn. $750,000. Plans deposit $20. Fulton Krinsky & Delamotte, 6014 Euclid Ave., Cleveland, archts. CD 11/29.

▲ **Fla., Tampa** — COURTHOUSE — B.A. 3/3 — Hillsborough Co., courthouse, $2,000,000. Plans deposit $50. Extended date. Reynolds, Smith & Hills, 227 Park St., Jacksonville, archts. W. O. Sparklin, 424 MacDill Ave., Tampa, assoc. archt. CD 1/4.

▲ **Mass., Weymouth**—SCHOOL—B.A. 3/3—Town E. S. Mapes, supt. Schools, 89 Middle St., 2 story, bsmnt., brick, steel, concrete Junior High School. $1,500,000. Plans deposit $50. Extended date. Colletti Bros., 687 Boylston St., Boston, archts., Hubbard-Lawless-Blakeley, 177 State St., Boston, engrs. Extended date. CD 1/24.

† **Oregon**—GARAGE, etc.—B. A. 3/3—U. S. Eng., 628 Pittock Block, Portland, Zone 5, construct garage and fire station bldgs. addns., installing gasoline storage tank adjacent to housing area at Lookout Point Reservoir, Serial No. CIVENG-35-026-50-249.

Va., Roanoke—SCHOOL—B. A. 3/3—City, at office City School Bd., 217 W. Church Ave., Huff Lane School. $300,000. Eubank & Caldwell, Boxley Bldg., archts.

Calif., Sacramento—WAREHOUSE—B. A. 3/6—Sacramento Unified School Dist., Sacramento, 2 story, concrete warehouse Approx. $68,000. Plans deposit $20. Charles F. Dean, 1521 I St., archt.

† **Arizona-Nevada**—SUBSTATION TRANSFORMER, etc. —B.A. 3/7—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Mesa and Coolidge, Ariz., transformer, resistor, neutral-grounding-equipment cubicle, reactor, circuit breaker, for Mesa and Coolidge substations. Davis Dam Proj., Spec. 2898. L. N. McClellan, ch. engr.

Calif., Monterey—SCHOOL—B. A. 3/7—Monterey Bd. Educ., 216 Cable Principal, Monterey, wood frame 10 classroom Monte Vista Elementary School, $250,000. Plans deposit $50. Robert Stanton, Box 2177, Carmel, archt. CD 6/22.

Mont., Helena—MEMORIAL—B.A. 3/7—State Bd. Examiners, Helena, 3 story, bsmnt. Montana Veterans and Pioneers Memorial Bldg. $750,000. Angus McIver, Great Falls, archt. CD 5/1/46.

Tex., Nacogdoches — HOSPITAL — B.A. 3/7 — City, masonry City Memorial Hospital alterations, addns. $400,000. Hal B. Tucker, Nacogdoches, archt. CD 11/21.

LOW BIDDERS

Calif., Los Angeles—OFFICE—State Div. Architecture, P. Wks. Bldg., Sacramento, Feb. 7, Los Angeles State Office Bldg. alterations from Harvey A. Nichols, 926 E. Slauson Ave., **$447,597.** CD 2/2.

▲ **Fla., Tallahassee**—POWER PLANT—City, City Hall, Feb. 13, complete new electric power plant at St. Marks in Wakulla Co., from Ivy H. Smith Co., 1525 San Marco Blvd., Jacksonville, Zone 7, **$1,228,514.** CD 1/11.

▲ **Md., Baltimore**—DORMITORY, etc.—State of Maryland Dpt. P. Imprvts., John B. Funk, ch. engr., 506 Park Ave., Feb. 9, (1) 3 story, bsmnt., 46x151 ft., steel, stone rein.-con. Men's Dormitory, Bldg. 29 (2) grd. and 1st floor irregular-shaped, stone, concrete, steel gymnasium and classroom bldg., enclosed swimming pool wing. (3) 3 story, bsmnt., 46x151 ft., rein.-con. stone, steel Womens Dormitory Bldg. 11, all above at Morgan State College, (4) combined bids on 1, 2 and 3, from Young & Adams, Inc., 2 W. 22 St., Zone 18, (1) base bid **$309,000***** from John K. Ruff, Inc., 100 W. 22 St., Zone 18, (2) base bid **$580,417** Alternate 1 **$77,700** Alternate 2 **$18,500** alternate 3 **$51,500**; (3) base bid **$374,522**; (4) **$1,256,735.** CD 1/26.

▲† **Mass., Boston**—HOSPITAL—U. S. Eng., Bldg. 21, U. S. Naval Drydock, South Boston, Feb. 7, veterans admin. hospital, Serial No. CIVENG 19-016-50-2, from McCloskey & Co., 1620 W. Thompson St., Phila., Pa., **$10,563,000**; elevators, from Otis Elevator Co., 130 Clardon St., Boston, **$550,211.** CD 10/11.

▲ **Mont., Butte**—CIVIC CENTER—City, City Hall, Jan. 31, general contract, civic center, from McKinnon-Decker Co., Helena, **$1,108,994**; mechanical and wiring, from Reardon Plumbing, Heating & Electric Co., 129 E. Park St., **$328,034.** Est. $995,000. CD 12/13.

▲ **N. Y., Middletown**—HOSPITAL—Bureau Contracts & Accounts, Albany, Feb. 8, general contract bldg. for 640 disturbed patients, Middletown State Homeopathic Hospital, from P. J. Carlin Constr. Co., 101 Park Ave., New York, Zone 17, **$3,119,000**; heating, from Joseph Davis, Inc., 20 W. Tupper St., Buffalo, **$259,793.** CD 12/30.

CONTRACTS AWARDED

▲ **Ala., Birmingham**—COLLEGE—University of Alabama, Tuscaloosa, medical and dental college at Birmingham Branch, to Daniel Constr. Co., 822 7 Ave. S., **$1,286,000.** Bids 1/5. CD 1/10, under LB.

▲ **Calif., Richmond**—HIGH SCHOOL—Richmond School Dist., 1108 Bissell Ave., 2 story, rein.-con. 46 classroom Walter T. Helms Junior High School, to John E. Branagh, 105 Sheridan Ave., Piedmont, **$1,596,700.** Bids 2/3. CD 2/10, under LB.

▲ **Conn., Meriden**—HOUSING—City of Meriden Housing Auth., 37 Gale Terrace, brick veneer, frame housing, Yale Acres, to A. Dapont Constr. Co., 1801 Thomaston Ave., Waterbury, **$1,520,000.** Bids 1/25, CD 1/31, under LB.

▲† **Mass., Boston**—HOSPITAL—U. S. Eng., Bldg. 21, U. S. Naval Drydock, South Boston, veterans admin. hospital, Serial No. CIVENG 19-016-50-2, to McCloskey & Co., 1620 W. Thompson St., Phila., Pa., **$10,563,000**; elevators, to Otis Elevator Co., 130 Clarendon St., **$550,211.** Bids 2/7, awarded 2/15. CD 2/9, under LB.

▲† **Minn., Minneapolis**—HOSPITAL—Director, Technical Services, Veterans Admin., Vermont Ave. between H and I Sts., N. W., Wash. 25, D. C., general contract 8 story Veterans Hospital addn., 54 St. and 48 Ave., to J. D. Hedin Construc. Co., 820 Michigan Ave. N. E., Wash., D. C., **$5,493,000*****steel water tank and tower to Pittsburgh-Des Moines Steel Co., Neville Island, Pittsburgh, Pa. **$54,600*****boiler house and addn., boiler and equipment replacement, to Fuel Economy Engr. Co., 510 New York Bldg., St. Paul, **$238,300.** Grand total $5,785,900. Bids 1/31. CD 2/7, under LB.

COMMERCIAL BUILDINGS

BIDS ASKED

Mich., Detroit—SALES and SERVICE—B. A. 2/28—Wyoming-Ford-Development Co., c/o T. R. Jahr, Assoc., archts., 21904 Michigan Ave., Dearborn, 1 story, 184x263 ft., rein.-con., structural steel, masonry, sales and service bldg. $300,000, CD 6/7/46, under Mich., Dearborn.

N. Y., Ogdensburg—CATHEDRAL—B. A. 2/28—Maginnis & Walsh, archts., 126 Newbury St., Boston, Mass., 1 story, bsmnt., 190x220 ft., brick, granite, limestone cathedral for Roman Catholic Diocese, Ogdensburg. Approx. $250,000. Extended date. CD 1/31.

▲ **O., Cincinnati**—APARTMENTS—B.A. 2/28—Pembleton & Mims, archts., 508 Title Guarantee Bldg., Birmingham, Ala., 350 unit brick, concrete apartments, Canterbury Gardens; 926 units Stratford Manor Apartments, for Warner-Kanter Co., 216 Empire Bldg., Birmingham, Ala. Approx. **$3,000,000.**

Pa., Willow Grove—THEATRE, etc.—B.A. 2/28—Willow Mart, York and Easton Rds., theatre and 5 stores. Approx. $500,000. David Supowitz, 246 S. 15 St., Phila., archt.

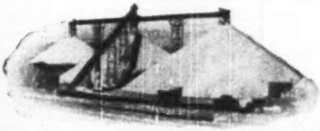
N. B., Campbellton—B.A. 2/28—Rev. J. A. Poirier, P.O. 2 Central Ave., church superstructure for Parish of Notre Dame des Neiges, Approx. **$250,000.** P. Lamieux, 750 Victoria Square, Montreal, Que., archt. P. D'Allemagne, 355 Berwick Ave., Mount Royal, engr. CD 1/23.

Ala., Birmingham—CHURCH, etc.—B.A. About 3/1—Our Lady of Sorrow, c/o Wilmot C. Douglas, archt., 226 N. 14 St., 28,000 sq. ft. joint church, school and convent. CD 3/18.

La., Metairie—SCHOOL—B.A. About 3/1—St. Francis Xavier Church, 448 Metairie Rd., parochial school, $250,000. Paul G. Charbonnet, Jr., 624 Lowerline St., New Orleans, archt.

N. Y., New York—EXCHANGE—B. A. 3/1—New York Telephone Co., 140 West St., telephone exchange bldg.

(Continued on page 88)



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Pioneer
Continuflo EQUIPMENT

(Continued from page 86)

alterations. $600,000. Voorhees, Walker, Foley & Smith, 101 Park Ave., Zone 17, archts. CD 10/12.

R. I., Newport—HOUSING—B.A. 3/1—First Naval Dist., Dist. Pub. Wks. Officer, Navy Bldg., 495 Sumner St., Boston 10, Mass., construct, finance and manage housing at U. S. Naval Base.

Minn., Blue Earth—SCHOOL—B.A. 3/2—Church of St. Peter & St. Paul, Rev. M. Satory, 2 story, brick, concrete school, $320,000, Plans deposit $15. Pass & Rockey, Mankato, archts. CD 1/12.

La., New Orleans—SERVICE, etc.—B.A. 3/3—Krauss Dept. Store, 1201 Canal St., (selected list bidders) 6 story, 128x200 ft. service bldg., and 6 story, 33x128 ft. store addn. Favrot, Reed, Mathes & Bergman, Nola Bldg. archts.

Tex., Fort Worth—THEATER—Bids Asked—Bill Boren, 1924 Fifth Ave., theater. $250,000. Joseph H. Gaylord, Neil P. Anderson Bldg., engrs. and archt. CD 1/30.

SOON LETS CONTRACT

▲ **Calif., Los Angeles**—STORE—Sears, Roebuck & Co., 2650 E. Olympic Blvd., soon lets contract 2 story, 151x576 ft., brick, concrete store, Victory Blvd. and Laurel Canyon Dr. **$1,500,000.** Stiles Clements, 210 W. 7 St., archt.

▲ **Ill., Chicago**—APARTMENT—Morris Greenberg & Meyer Hartowski, c/o Dubin & Dubin, archts., 140 N. Dearborn St., Zone 2, soon lets contract 14 story apartment, Marion Dr., between Margate and Argyle Aves., $5,600,000. CD 11/11.

▲ **Ind., Hammond** — UNIVERSITY — Purdue University, West Lafayette, soon lets contract 2 story, brick, steel, concrete, stone Calumet Center University, incl. classrooms and laboratories, $3,000,000. W. Schoele & Assoc., Lafayette, archts. CD 9/29.

Mich., East Lansing—THEATRE, etc.—Louben Bldg. Co., c/o Arnold & Fuger, archts., 510 Madison Bldg., Detroit, soon lets contract rein.-con., structural steel, masonry, theatre and retail store development, $500,000. CD 12/30.

▲ **Pa., Johnstown**—HOSPITAL—Mercy Hospital, Johnstown, soon lets contract 7 story bsmnt., brick, tile, steel hospital and boiler house, Franklin St. $1,000,000. Kaiser, Neal & Reid, 324, 4th Ave., Pittsburgh, archts. CD 1/11.

▲ **Tex., Houston**—HOSPITAL—Arabia Temple Shrine, AAONMS, 1322 Prairie St., soon lets contract 8 story bsmnt., 277-bed crippled children's hospital. **$2,500,000.** Alfred C. Finn, Bankers Mortgage Bldg., archt. Robert J. Cummins & Reginald F. Taylor, Bankers Mortgage Bldg., engrs. CD 1/16.

Tex., Houston—EDUCATIONAL, etc.—Christ Episcopal Church, Texas Ave. and Fannin St., soon lets contract remodeling, social hall, educational. $500,000. Maurice J. Sullivan, 3901 Travis St., archt. CD 1/13.

LOW BIDDERS

▲ **Ariz., Phoenix** — Y.M.C.A. BLDG.—Young Men's Christian Assn., Second Ave. and Adams St., Jan. 27, 7 story, steel, concrete Y.M.C.A. bldg., from E. W. Duhame Constr. Co., 2250 E. Washington St., **$1,285,000.** CD 1/6.

▲ **Ia., Ottumwa**—HOSPITAL—Ottumwa Hospital Assn., Jan. 31, general contract hospital, from Ringland-Johnson, Inc., 820½ Locust St., Des Moines **$984,495;** mechanical work, from Mechanical Contractors, Inc., 613 Kahl Bldg., Davenport, **$279,287.** CD 1/5.

▲ **Tex., Bergstrom Field (P. O. Austin)**—HOUSING—Dpt. Air Force, The Pentagon, Wash. 25, D. C., construct, manage, and finance housing, from Earl A. Thompson & Assoc., Milan Bldg., San Antonio, **$4,320,000.**

CONTRACTS AWARDED

▲ **Calif., Monterey Park**—DWELLINGS—Larchmont Land Co., 2894 Romana St., Los Angeles, 189 frame, stucco dwellings, Larchmont Knolls, Owner builds, **$1,228,500.** Wm. Bray, 5670 Wilshire Blvd., Los Angeles, archt.

▲ **Calif., Muroc**—HOUSING—Dpt. Air Force, The Pentagon, Wash., 25, D. C., construct, finance and manage private housing incl. 550 frame, stucco dwellings for Dpt. Air Force, to H. B. Hayes & Assoc., 13006 Saticoy St., Los Angeles, Approx. **$5,000,000.**

▲ **Calif., San Bernardino**—DWELLINGS—Clevel, Ltd., 1653 W. 7 St., 188 frame, stucco dwellings, Owner builds, **$1,081,000.** Wm. Bray, Wilshire Blvd., Los Angeles, archt.

▲ **Conn., New Britain**—HOUSES—A. Dapont Constr. Co., 1901 Thomaston Ave., Waterbury, 200 single house, Sunnyside Manor, Owner builds, **$1,750,000.** CD 2/7.

▲ **Fla., Tampa**—HOMES—Sunnydale Acres, Inc., c/o V. A. DeBree Estralla and Church Sts., 200 homes, separate contracts, **$1,500,000.**

▲ **Ga., Atlanta**—APARTMENT UNITS—Lakewood Village, Inc., c/o contractor, 352 apartment units, to Algernon Blair, Henry Grady Bldg., Atlanta. Approx. **$1,000,000.**

▲ **Ga., Atlanta**—APARTMENT DEVELOPMENT—Paces Ferry Tower Apartments, Inc., c/o contractor, apartment development, to Mion Constr. Co., 305 Techwood Dr., Approx. **$1,000,000.** Bids 2/2. CD 1/31.

▲ **Ga., Atlanta**—OFFICE—Realty Operations, Inc., c/o Ben Ja. Massell Companies, 32 Pryor St. N. E., office, Owner builds, **$1,600,000.** CD 1/24.

▲ **La., Baton Rouge**—HOUSES—Crawford Corp., 2019 N. 3 St., 133 houses, north section of city, Owner builds. **$7,000,000.**

▲ **La., New Orleans**—APARTMENT—Claiborne Towers, c/o contractor, 17 story apartment, to Shelby Constr. Co., 4320 Paris Ave., Approx. **$10,374,896**

▲ **Minn., St. Paul**—SCHOOL—St. Luke's R. C. Church, 22 N. Lexington Parkway, general contract 2 story, bsmnt. school, to Hagstron Constr. Co., 1567 Selby Ave. Est. **$1,000,000,** Bids 1/24, CD 12/29.

▲ **N. J., Longport**—HOTEL and COTTAGES—Boardman Smith Corp., 1322 W. Airdrie St., Phila., Pa., hotel and cottages, 29 and 31 Aves., separate contracts, **$1,000,000,** Miller Meyers Co., 120 Market St., Phila., Pa., engr.

▲ **N. Y., Brooklyn**—APARTMENT—Fasolino Bros., Inc., 26 Court St., Zone 2, 8 story apartment, 8 Ave. and Carroll St. Owner builds. Approx. **$1,000,000.**

N. Y., Brooklyn—HOUSES—Marine Gardens Apartment Corp., 17 Neptune Ave., Zone 29, 24 two family houses, at 2994-3016 Avenue R, 1838-1856 Burnett St., and 2715-2719 Fillmore St. Owner builds. **$696,600.** Lama, Proskauer & Prober, 383 Pearl St., Zone 1, archts.

▲ **N. Y., Wantagh**—HOUSING DEVELOPMENT—Housing Associates, Inc., 80-31 161 St., Jamaica, 1,000 houses, Jerusalem Ave., Oakfield Rd., N. Jericho Hy. to be known as Forest City, own forces. **$10,000,000.** Matern & York, 90-04 161 St., Jamaica, archts.

▲ **O., Parma**—APARTMENTS—Cleveland Parkway Gardens, Inc., 308 Marshall Blvd., Cleveland, general contract thirty-three 3 story, bsmnt., brick, block apartments, to Dwyer Constr. Co., 308 Marshall Blvd., Cleveland. Total est. **$3,500,000.** Wm. Harris, 417 N. Washington Ave., Alexandria, Va., archt.

▲ **Pa., Bristol**—RESIDENCES—William W. Warner, Greene Lane and Farragut Ave., residential development, Green Lane, to Frank Spezzano Jr., 209 Dorrance St. **$1,500,000.**

▲ **Pa., Phila.**—APARTMENT, etc.—Country Club Estates, Inc., c/o Mayer I. Blum & Son, 2601 Parkway, apartment, shopping center and theatre, City Line and Monument Ave., to Turner Constr. Co., 1500 Walnut St., Approx. **$40,000,000.** Sweet & Schwart, 5450 Wissohickon Ave., archts.

▲ **Pa., Phila.**—RESIDENCES—Eastern Home Builders, Inc., Fox Bldg., residential development, Howland and Claridge Sts., separate contracts. Approx. **$2,100,000.** Henry S. Berg, 1411 Walnut St., archts.

▲ **Pa., Pittsburgh**—APARTMENT—Behrman & Passell, 5821 Walnut St., 9 story, bsmnt., 100x180 ft., brick, block, multi family apartment, Center and S. Negley Sts. Owner builds. Approx. **$1,300,000.** Tennyson & Van Wart, 666 Washington Rd., Mt. Lebanon, Pittsburgh, archts.

▲ **Pa., Rydal**—RESIDENCES—Carl Metz, 8014 Ogontz Ave., Phila., residential development, Meeting House and Fox Chase Rds., separate contracts. **$4,000,000.**

▲ **Tex., Dallas**—APARTMENT—Paul Crum, 4418 Vandelia St., 101, one-bedroom apartment units, Santa Fe Ry. and Paulas Ave. Owner builds. Approx. **$1,000,000.** CD 1/19.

▲ **Tex., Dallas**—APARTMENT—Fairmont Plaza, Inc., c/o S. R. Franck, 1315 Cadiz St., 6 story, bsmnt., apartment, to Henry C. Bennett, 3721 Maplewood St. Approx. **$1,000,000.** Awarded 2/8. CD 2/13.

▲ **Tex., Houston**—DWELLINGS—S. N. Adams, 3713 Inwood St., 150 dwellings in area of Oak Estates. Owner builds. Approx. **$1,300,000.** CD 1/12.

▲ **Tex., Houston**—APARTMENT—Pleasantville, Inc., c/o Melvin A. Silverman, 6110 Almeda Rd., 250 apartment units, off 8200 block Market St. Rd. Owner builds. Approx. **$1,500,000.** CD 1/6.

INDUSTRIAL BUILDINGS

BIDS ASKED

Ky., Somerset—WAREHOUSE, etc.—B.A. About 3/1—South Kentucky Rural Electric Co-operative Corp., Somerset, warehouse and office, $100,000. Sam C. Molloy, Republic Bldg., Louisville, archt. CD 12/30, under Unclassified, Kentucky.

Pa., Phila.—FACTORY—B.A. About 3/1—Sterling Paper Co., B and Lippincott Sts., factory alterations. $70,000. Irvin Michaelson, Fox Bldg., archt.

▲ **Kan., Kansas City**—PLANT—Bids Asked—International Harvester Co., 1413 W. 14 St., (selected list bidders) two 1 story, brick, concrete buildings, one 550,000 sq. ft., other 350,000 sq. ft., on 33 acre tract in Fairfax Dist., located between White Eagle and Kindleberger Rds. with 2 north and south streets (McCormick and Harvester Sts.) to be cut through, **$6,000,000.** CD 11/24/48.

Pa., Phila.—PLATFORM SHED—Bids Asked—Quaker City Cold Storage Co., Delaware Ave. and Spruce St., platform shed over railroad siding. Approx. $50,000.

▲ **Tex., Snyder**—GAS PLANT—Bids Asked—Standard Oil Co. of Texas, City Natl. Bank Bldg., Houston, casinghead gas plant. $2,500,000.

SOON LETS CONTRACT

▲ **Mich., Dearborn**—DYNAMOMETER—Ford Motor Co., 3000 Schaefer St., soon lets contract 2 and 3 story 427x466 ft., irregular shaped, rein.-con., masonry, structural steel, dynamometer bldgs., fuel house and chassis bldg., Oakwood Bldg. $5,000,000. Voorhees, Walker, Foley & Smith, 101 Park Ave., New York, N. Y., archts. CD 6/7/46.

▲ **Mich., Plymouth**—PLANT—Argonaut Realty Co., Detroit Transmission Div. General Motors, 308 General Motors Bldg., soon lets contract 1 and 2 story, 432x463 ft., rein.-con., structural steel, masonry plant addn. **$2,000,000.**

LOW BIDDERS

▲ **Ont., Toronto**—PLANT—Canadian S-K-F Co. Ltd., 1057 Bay St., Feb. 6, superstructures 3 story, 190x340 ft., structural steel, brick for plant and 2 story for office, Birchmount Ave., from Pigott Constr. Co., Ltd., 1250 Bay St. Approx. **$2,000,000.** CD 1/19.

CONTRACTS AWARDED

▲ **Ga. Americus**—PLANT—Manhattan Shirt Co. 207 River St. Paterson, N. J. 85,000 sq. ft. shirt mfg. plant, to Americus Eng. & Constr. Co., Americus, Approx. **$1,500,000.** Bids 12/21. CD 12/14.

▲ **Mich., Detroit**—WAREHOUSE—Lincoln Mercury Div. Ford Motor, 6200 W. Warren Ave., 1 story, office; 2 story, 480x860 ft., masonry, steel warehouse, to Campbell Constr. Co., 3255 Goldner St., **$3,000,000,** Earle W. Shaffer, Cheyenne St., archt.

▲ **N. D., Velva**—GENERATING PLANT—Central Electric Power Co-operative, Velva, turbines for steam generating plant, to General Electric Co., 840 S. Canal St., Chicago, Ill., **$1,000,000** sub-station tarnsformers, to Westinghouse Electric Co., 20 N. Wacker Dr., Chicago, Ill., **$129,000.** Bids 12/28. CD 12/23.

▲ **Okla., Okmulgee**—PLANT—Phillips Petroleum Co., Bartlesville, oil separating and processing plant. Owner builds. Approx. **$3,750,000.** CD 1/26.

▲ **Pa., Pittsburgh**—STEEL MILL—Jones & Laughlin Steel Corp., 3 and Ross Sts., rehabilitation steel plant, 2 ave. Owner builds. Approx. **$4,000,000.** CD 3/17/49.

▲ **Tex., Corpus Christi**—PLANT—Erle P. Halliburton & Assoc., c/o Driscoll Hotel, cement mfg. plant. Owner builds. **$1,750,000.** CD 1/2/47.

▲ **Tex., Snyder**—PLANT—Fullerton Oil Co., Snyder, 40 m. cu. ft. daily capacity refrigerator type gasoline plant, to Hudson Eng. Corp., 2711 Danville St., Houston. Approx. **$1,500,000.**

▲ **T. H., Honolulu**—PLANT—Pacific Refiners, c/o Honolulu Gas Co., Honolulu, T. H., asphalt mfg. plant, to Fish Engineering Corp., M & M Bldg., Houston, Tex., **$1,250,000.**

▲ **Man., Winnipeg**—REFINERY—Imperial Oil Ltd., 56 Church St., Toronto, Ont., oil refinery at East Paul, 7 mi. from here on east bank of Red River, to Canadian Kellogg Ltd., 34 Adelaid St. W., Toronto, Ont. Total cost **$10,000,000.** CD 1/26.

UNCLASSIFIED

BIDS ASKED

Missouri—RURAL DISTRIBUTION LINES—B.A. 2/28—Citizens Electric Corp., Theo. A. Carron, pres., St. Genevieve, labor only, 186.07 mi. 7.2. KV, single-phase rural distr. lines, St. Genevieve Co., Proj. Mo. 58D St. Genevieve. Plans deposit $10. Bids 2/2 rejected. Drazen & Assoc., 8135 Forsyth Blvd., Clayton, St. Louis, Zone 24, consult. engrs., CD 1/16.

O., Kent—MEMORIAL STADIUM—B.A. About 3/1-Dpt. Pub. Wks., S. O. Linzell, dir., Columbus, first unit of 5,000 seat capacity Memorial Stadium for Kent State University. $60,000. CD 11/29.

Nebraska—CIRCUIT BREAKERS—B.A. 3/1—Bureau Reclamation, Dpt. Interior, Casper, Wyo., one 115,000 volt and two 34,500 volt circuit breakers and three 115,000 volt disconnecting switches for Sidney substation, Spec. R7-108 (Region 7), Missouri River Basin Proj.

N. D., Grand Forks—FIELD HOUSE, etc.—B.A. 3/3—State Bd. Higher Educ., Bismarck, field house and gymnasium at University of North Dakota, $800,000. Wells & Denbrook, Grand Forks, archts. CD 4/28.

Oregon—RURAL DISTRIBUTION LINES—B.A. 3/9—Coos Electric Co-operative, Coquille, 32.7 mi. 69 kv rural distr. line, Coos Co. Plans deposit $25. Wismer & Becker, 1219-28 St., Sacramento, Calif., engrs. CD 9/18/47.

† **Oregon**—RECREATION FACILITIES—B.A. 3/9—U. S. Eng., Pittock Block, Portland, recreation facilities, Fern Ridge Reservoir, Lane Co., CIVENG-35-026-50-254.

SOON LETS CONTRACT

▲ **Tenn., Nashville**—FIELDHOUSE—Vanderbilt University, Nashville, soon lets contract fieldhouse. **$1,500,000.** CD 12/2/48.

LOW BIDDERS

▲† **Oregon**—RAIROAD RELOCATION—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., Jan. 20, furnish track materials for Spokane, Portland & Seattle rail relocation, CIVENG-45-164-50-74; and furnish contractors mill track material for Union Pacific rail relocation; CIVENG-45-164-50-73, from Colorado Fuel & Iron Corp., Box 1920, Denver, Colo., **$1,121,259** and **$522,487** respectively. CD 12/29 and CD 12/21.

▲† **Washington**—RAILROAD RELOCATION—U. S. Eng., 19 E. Poplar St., Walla Walla, Feb. 10, constr. 11.6 mi. section, Spokane, Portland & Seattle Ry. relocation, CIVENG -45-164-50-65, from Gibbons & Reed Co., 259 Third St. W., Salt Lake City, Utah, **$1,548,600.** Est. $2,197,914. CD 2/2.

CONTRACTS AWARDED

▲ **Calif., San Francisco**—TUNNEL—Dpt. P. Wks., City Hall, Broadway tunnel, approaches, Spec. 20,650, to Morrison-Knudsen Co., Inc., 1 Montgomery St., **$5,243,535.** Bids 2/1. CD 2/7, under LB.

▲ **Wyo., Laramie**—FIELD HOUSE—University of Wyoming, Laramie, Feb. 8, 3 story, 262x274 ft., 12,000 seating field house and 87x352 ft., 7,500 seating, steel, concrete stadium, to Spiegelberg Lumber & Building Co., 259 W. Fremont St., Laramie. **$1,305,000,** Est. $1,500,000. Bids 2/8, awarded 2/9. CD 1/4.

Proposal Advertisements see pp. 89 to 91 & 99

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2925) will be received by Bureau of Reclamation, Chester, Montana, March 21, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of 30,000-kva Havre substation, Fort Peck Project, Montana. The work is situated about 7 miles southwest of Havre, Montana. Principal items are approximately: 1,000 cu. yds. of grading; 1,550 cu. yds. of excavation; 350 cu. yds. of concrete; furnishing and constructing one substation service building; installing 375,000 lbs. of circuit breakers, disconnecting switches, and other electrical apparatus; furnishing and erecting 790 lin. ft. of chain-link fence; and other work. Time allowed for completion will be 240 days. For particulars, address Bureau of Reclamation, Chester, Montana; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.

(607)

OFFICIAL PROPOSALS

Bids: March 17, 1950 (611)

Flood Control Project

PHILADELPHIA, PENNSYLVANIA
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING, SURVEYS AND ZONING

Sealed proposals will be received at Room 903, City Hall Annex, until 12 o'clock noon, Friday, March 17, 1950, and opened at that time in Room 903 City Hall Annex, Philadelphia, Pennsylvania for

SCHEDULE "A"—FRANKFORD CREEK FLOOD CONTROL PROJECT

1. Contract No. M 107 (part A)
2. Contract No. M 108 (part B)
3. Contract No. M 109 (part C)
4. Contracts Nos. M 107, M 108 and M 109 (parts A, B, C, combined)

The principal items of work are:

Part A—A reinforced concrete chute 60 feet wide, 10 feet deep, by 2516 feet long, and a rigid frame concrete bridge.

Part B—A reinforced concrete enclosed Conduit 65 Feet wide by 580 feet long.

Part C—A plain concrete gravity wall channel approximately 1472 feet long with an earth invert and riprapped side slopes.

Bidders may bid any part or parts of the work, or on the project as a whole.

Proposal forms and specifications may be obtained in room 1101 City Hall Annex. Blueprints of plans may be purchased at bidders expense, directly from the Keystone Blue Paper Co., 51 North 13th Street, Philadelphia 7, Penna.

No bids will be received unless bidder is qualified by the Director of Public Works. The questionnaire form with all questions fully answered must be filed with the Director of Public Works at least one week prior to the date of opening bids.

Each bid must be accompanied by security in form and amount as set forth in proposal form.

THOMAS BUCKLEY, Director

Bids: March 20, 1950 (555)

Refuse Incinerator Plant

NOTICE TO BIDDERS

REFUSE INCINERATOR PLANT
FOR THE
VILLAGE OF PORT CHESTER,
WESTCHESTER COUNTY,
NEW YORK

Sealed bids in opaque envelopes for Contracts 1A and 1B, covering the construction of a new Refuse Incinerator plant; and Contracts 2, 3 and 4, covering the Heating, Plumbing and Electrical Systems, respectively, will be received by the Village Clerk at a meeting of the Board of Trustees, to be held in the Court Room in the Police Headquarters Buliding, 350 North Main Street, Port Chester, Westchester County, New York, until eight (8) o'clock P.M., Eastern Standard Time, MARCH 20, 1950, and then at said place, publicly opened and read aloud.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications and Form of Performance Bond may be examined at the office of the Village Clerk, 110 Willett Avenue, Port Chester, New York, and copies thereof may be obtained upon payment of Fifteen ($15.00) Dollars for each set. Any bidder, upon returning such set promptly and in good condition, will be refunded his payment, and any non-bidder upon so returning such set within ten (10) days after the date for the receipt of bids, will be refunded Five ($5.00) Dollars. Checks given as deposits on plans and specifications shall be made payable to the Village of Port Chester.

In general, the work included consists of the construction of a new crane and bin type refuse incinerator plant of 120 tons per day capacity, complete with earth ramp, grading and the demolition of the existing plant; all of which shall be performed with a minimum of interference with the operation of the existing incinerator plant during construction.

CONTRACT NO. 1A covers the construction of the BUILDING and appurtenances. CONTRACT NO. 1B covers the FURNACES and appurtenant mechanical equipment. Alternate bids are permitted on mechanically stoked type furnaces and on manually stoked circular type furnaces. Completion time 300 consecutive days.

The HEATING, PLUMBING and ELECTRICAL installations are to be executed under CONTRACTS 2, 3 and 4, respectively.

Each bidder must deposit with his bid, but not enclosed in the envelope containing his bid, an amount of not less than Five (5%) percent of the base bid in the form of cash or a certified check (bid bonds will not be acceptable), subject to the conditions provided in the Information For Bidders.

The Village of Port Chester, Westchester County, New York, reserves the right to reject any and all bids, waive any informalities, or to accept that bid, acceptance of which will, in the judgment of the Board of Trustees of the Village, best secure the public interest and efficient work.

No bidder may withdraw his bid within Forty-five (45) days after the date of opening thereof.

DANIEL A. O'CONNELL,
Clerk of the Village of Port Chester,
New York

Dated: February 16, 1950

Bids: March 9, 1950 (604)

Construction of Bridge & Multiple Arch Culvert

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 29A, SECTION 3, LOCKATONG CREEK BRIDGE

Construction of Lockatong Bridge and Multiple Arch Culvert on Route 29A, Section 3 in Delaware Township, Hunterdon Co.

Estimated:

8,105 cu. yds. Channel Excavation
80 lin. ft. 123" x 77" C. M. Multiplate Arch
605 cu. yds. Foundation Excavation
887 cu. yds. Concrete in Structures
40,320 lbs. Reinforcement Steel in Structures
176,000 lbs. Structural Steel

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, New Jersey, on Thursday, March 9, 1950, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in acordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J. and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard propoal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

Bids: March 13, 1950 (603)

Furnishing & Delivery of Centrifugal Pumps

NOTICE TO BIDDERS

Sealed proposals for the furnishing and delivery of 6-12 mgd. single stage centrifugal pumps direct connected to 600 h.p., 3 P., 60 C., 2300 V. synchronous motors, and 2-12 mgd., Single stage centrifugal pumps connected to 600 h.p., 3 P., 60 C.-2300-V synchronous motors with Hydraulic couplings will be received by the City Purchasing Agent at his office, Room 36, City Hall, No. 20 South Fitzhugh Street, Rochester 14, N. Y., until 11:00 o'clock A.M., Eastern Standard time on March 13th, 1950, at which place and time they will be publicly opened and read aloud.

Bidding sheets, specifications and contract may be obtained at the office of the Purchasing Agent upon deposit of $5.00 which will be refunded providing the specifications are returned in good condition within 10 days after the opening of bids.

All bids shall be made on the form provided with the specifications and shall be accompanied by a Certified check for an amount equal to five per centum (5%) of the total amount of the bid, payable to the City of Rochester, N. Y., as a guarantee that the bider will execute the contract within ten (10) days after being notified that his bid has been accepted.

No proposal will be accepted by the City unless the Bidder shall have filed with the Purchasing Agent, at least seven days prior to the date set for the opening of bids a certified statement showing financial responsibility, experience, plant and equipment on a form supplied by the City Comptroller and available at the office of the Purchasing Agent.

The Purchasing Agent reserves the right to reject any or all bids.

Dated: Feb. 20th, 1950.

FRED W. ERETH
Purchasing Agent

Bids: April 6, 1950 (602)

Water Treatment Plant

NOTICE TO BIDDERS

Sealed proposals for the construction of a water treatment plant will be received by the Board of Trustees of the Village of Westfield, New York, at the Municipal Building, 23 Elm Street, until two o'clock P.M., E.S.T., on the 6th day of April, 1950.

Information for bidders can be obtained at the office of the Superintendent of Water Works at Westfield, New York, or the office of Williams S. Lozier Company, Engineers, 10 Gibbs Street, Rochester, New York. Copies of plans may be obtained from the Engineers upon the payment of $10.00 for each set, which will not be refunded.

The work consists of the construction of a filter plant with capacity of 2,000,000 gallons per day and a reinforced concrete reservoir with capacity of 1,400,000 gallons and the optional construction of a garage.

W. H. Rodden, Clerk-Treasurer
Westfield, New York.

(Continued on page 90)

CONTRACTORS
Watch this Section
for New Projects

Publish your announcement thru the "Proposals Section" of Engineering News-Record and get their bids.

OFFICIAL PROPOSALS

(Continued from page 89)

(609)

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for the following projects.

• • •

CONTRACTS NOS. 7, 7A and 7B

The work to be performed under these Contracts involves grading, drainage structures, and incidental work in connection with the construction of the New Jersey Turnpike, Section 2, Between Woodbury Heights and Hartford, in Gloucester, Camden and Burlington Counties, New Jersey.

Principal items of work for Contracts Nos. 7A and 7B include:

	Contract No. 7A	Contract No. 7B
Excavating anf grading	3,080,000	1,850,000 cu.yds.
Borrow excavation	1,210,000	220,000 cu.yds.
Compaction of material in-place	337,000	339,000 cu.yds.
Topsoiling	532,000	368,000 sq.yds.
Concrete	3,460	3,150 cu.yds.
Timber pile, treated	34,100	14,100 lin.ft.
Storm drains	8,000	8,400 lin.ft.
Pavements	10,700	15,300 sq.yds.
Reinforcing steel	371,000	421,000 lbs.

Principal items of work for Contract No. 7 equal the sum of the quantities listed for Contracts Nos. 7A and 7B.

Proposals may be submitted on one or more contracts.

Contract documents may be seen, and may be inspected by prospective bidders during office hours, after February 20, 1950, at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey and at the Offices of the Engineer, Gannett Fleming Corddry and Carpenter, Incorporated, 600 North Second Street, Harrisburg, Pennsylvania and Old Barrington Airport, Barrington, New Jersey.

Each set of contract documents comprising Contracts Nos. 7A, 7B and 7 will be furnished on deposit of $15.00, upon application to the Authority, and such deposit will be refunded upon return of the Contract Documents in good condition within 10 days after the opening of the Proposals. Plans showing the grading cross-sections (386 sheets) may be examined in the office of the Authority and at the offices of the Engineers.

• • •

CONTRACT NO. 10

The work to be performed under this Contract involves Grading, Drainage, Drainage Structures and necessary incidental work in connection with construction of 6.1 miles of the New Jersey Turnpike, Section 5, Sta. 11+20 to Sta. 335+67, from the Raritan River to the vicinity of Main Street, Woodbridge, Middlesex County. Maintenance of traffic is involved at various highway and railroad intersections. Principal embankment is at the north approach to the proposed Raritan River Bridge. Completion date is February 1, 1951.

Principal items of work include:

Clearing and grubbing	140 acres
Roadway excavation, earth	2,180,000 cu.yds.
Roadway excavation, rock	2,400 cu.yds.
Roadway excavation, muck	107,000 cu.yds.
Open foundation excavation	10,000 cu.yds.
Embankment, compacted	1,900,000 cu.yds.
4-inch topsoiling	319,000 sq.yds.
Concrete, class B for culverts	11,350 cu.yds.
Reinforced concrete pipe (various sizes)	9,580 lin.ft.
Other drain pipe, metal, clay and plain concrete (various sizes)	11,700 lin.ft.

Contract documents may be seen, and may be inspected by prospective bidders during office hours, after February 20, 1950 at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton, New Jersey, and at the offices of the Engineers, Fay, Spofford & Thorndike, 11 Beacon Street, Boston, Massachusetts, and 25 Livingston Avenue, New Brunswick, New Jersey.

Contract documents will be furnished on a deposit of $15.00 for each set, upon application to the Authority, and such deposits will be refunded upon return of the Contract Documents in a good condition within 10 days after the opening of the Proposals. Plans showing grading cross sections (151 sheets) may be examined in the office of the Authority or at the New Brunswick, N. J., office of the Engineers.

• • •

CONTRACT NO. 13

The work to be performed under this Contract involves furnishing, placing and compacting various graded borrow excavation materials in embankments; stabilizing existing ground by the use of vertical sand drains; excavating portions of embankment placed as overload and depositing the materials so excavated on the embankments; excavating ditches for mosquito control; and other incidental work in connection with the construction of the New Jersey Turnpike from the Linden-Elizabeth City Line to Third Avenue in the City of Elizabeth, Union County, New Jersey.

Principal items of work include:

Roadway excavation, muck	32,000 cu.yds.
Roadway excavation, earth	14,000 cu.yds.
Borrow excavation	750,000 cu.yds.
Vertical sand drains	33,500 lin.ft.
Storm drains (various sizes)	2,580 lin.ft.

Contract documents may be seen, and may be inspected by prospective bidders during office hours, after February 16, 1950 at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey, and at the office of the Engineers, Edwards and Kelcey, Frederic R. Harris, Inc. and O. J. Porter & Company, Associated, 3 William Street, Newark, New Jersey.

Contract documents will be furnished on a deposit of $15.00 for each set not including the Plans showing the grading cross-section, and an additional deposit of $15.00 for each set of the Plans showing the grading cross-sections upon application to the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey, and such deposits will be refunded upon return of the contract documents in good condition within 10 days after the opening of the proposals.

Proposals for Contract #7 will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey, until 10:30 o'clock on the morning of March 14, 1950 and thereafter in the Veteran's Room of the War memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey until 11:00 A.M. on the same date, at which latter time and place said proposals will be publicly opened and read. Proposals for Contract #10 will be received on March 8, 1950, at the same time and at the same place, whereas proposals for Contract #13, will be received on March 7, 1950, at the same place and the same hours.

The receipt and opening of proposals is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposal a revised financial statement and a statement of plan and equipment.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications for Construction of the New Jersey Turnpike and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the Contract on the outside, and must be accompanied by *a certified check* drawn to the order of the New Jersey Turnpike Authority *and a proposal bond, each for not less than five percent of the amount of the proposal,* but not less than $500.00 nor more than $200,000.00 and must be delivered with proposal on or before the hour named. Copies of the proposal form to be used for submitting proposals, of the form for proposal bond, of the form to be used for financial statement and plan and equipment statement to be submitted with proposal, and special addressed envelope are furnished in detached form with the Contract Documents.

The Contract will be awarded or proposals rejected within thirty (30) days from the date of opening proposals. The right is reserved to reject any or all proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast
Chairman

February 15, 1950

Bids: March 1, 1950 (553)

Construction of a Bulkhead

AT
GREILICKVILLE HARBOR FOR ELMWOOD TOWNSHIP, LEELANAU COUNTY (NEAR TRAVERSE CITY) MICHIGAN

Sealed Proposals addressed to John C. Norton & Assoc., 415 Fifth Street, Traverse City, Michigan will be received at their

office by noon, March 1, 1950. These proposals will be publicly opened and read at the Traverse City Chamber of Commerce at 1:30 P.M. E.S.T. the same day.

Access to the plans and specifications may had at the office of the Engineers, Traverse City, Michigan. A deposit of $10 is required for each set.

A certified Check for 5% of the bid or a satisfactory Bidder's Bond made payable to the Township of Elmwood must accompany each proposal. The check of the successful Bidder shall be forfeited to the Board in case he fails to execute the Contract within 10 days after the award.

The Board reserves the right to reject or accept any or all bids, or any part thereof, it may deem to be to the best interests of the Board.

No Bidder may withdraw his bid within 30 days after the date set for the opening of Bids.

The successful Bidder will be required to furnish satisfactory evidence of ability to perform and execute the contract, also, he shall furnish evidence that he is able to furnish bond as required. He shall also supply Compensation, Public Liability and Contingent and Property Damage Insurance as specified in detail in Instructions to Bidders.

Signed, Lou De Young
Clerk, Township Board
Township of Elmwood
Leelanau County, Michigan

Bids: March 6, 1950 (608)

Furnishing and Delivering Cast Iron Pipe—Bell and Spigot and Cast Iron Pipe—Mechanical Joint

WASHINGTON SUBURBAN SANITARY COMMISSION
CONTRACT NO. 751-W

Sealed proposals for furnishing and delivering twenty-five-thousand (25,000) feet of 6", fifteen-thousand (15,000) feet of 8", seven-thousand (7,000) feet of 10" cast iron pipe—bell and spigot, five-thousand (5,000) feet of 12" cast iron pipe—bell and spigot, cement lined, fifteen-thousand (15,000) feet 6", ten-thousand (10,000) feet of 8" cast iron pipe—mechanical joint will be received at the office of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland until 2:20 P. M. Eastern Standard Time, Monday, March 6, 1950 at which time and place they will be publicly opened and read.

Specifications may be obtained from W. R. Douglas, Purchasing Agent of the Commission, Hyattsville, Maryland.

Dwight B. Galt, Chairman
Warren Browning
Leland G. Worthington
Commissioners

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2923) will be received by Bureau of Reclamation, Elverta, California, March 29, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of Sacramento and San Joaquin River crossing towers. The work is situated approximately 1 mi. south, and 4 mi. southeast of Rio Vista, California. Principal items are: furnishing and installing 8 steel towers; unwatering foundations for footings; excavation for tower sites and footings; furnishing and driving timber piles; furnishing and placing concrete footings; airway obstruction lighting and marking; and other work. Time allowed for completion will be 330 days. For particulars, address Bureau of Reclamation, Elverta, California; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.

(606)

(Continued on page 91)

"Opportunity" Advertising:
Think
"SEARCHLIGHT"
First

OFFICIAL PROPOSALS

(Continued from page 90)

Bids: March 9, 1950 (605)

Paving Bridge Approaches

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE S49, SECTION 5B
GRASSY SOUND BRIDGE APPROACHES —PAVING

Paving, Grassy Sound Bridge Approaches on Route S49, Section 5B, Lower Township and City of Wildwood, Cape May County. Length 0.688 miles.
Estimated:

4,200	cu. yds. Roadway Excavation—Earth
5,400	cu. yds. Borrow Excavation
18,000	sq. yds. 12" Gravel Base Course
18,000	sq. yds. 4" Modified Pen. Mac. Int. Course
2,553	tons Pavement Type MA-BC

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, New Jersey, on Thursday, March 9, 1950, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in acordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.000 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2914) will be received by Bureau of Reclamation, Denver, Colorado, March 21, 1950, and then publicly opened for furnishing three 115-kv, 800-amp, 1,500,000-kva, outdoor power circuit breakers; and six 115-kv, 600-amp, 3-pole, outdoor disconnecting switches for Alcova switchyard, Transmission Division, Wyoming, Missouri River Basin Project. Delivery is desired within 210 days. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(558)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2919) will be received by Bureau of Reclamation, Denver, Colorado, March 14, 1950, and then publicly opened for furnishing miscellaneous structural steel for roof framing and crane runway for Canyon Ferry Power Plant, Helena-Great Falls Division, Canyon Ferry Unit, Montana, Missouri River Basin Project. Delivery is desired within 270 days. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(557)

(Continued on page 99)

EMPLOYMENT

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

CIVIL SERVICE

SEWER DESIGN Engineers. At least four years of graduate civil engineering experience with experience on municipal sewer systems preferred. For work on extensive sewer survey and design projects with the City of Dayton. Registered in the State of Ohio or eligible for such registration. Starting salary $3600 to $5000, depending on qualifications. Apply with full details and photograph to Personnel Supervisor, Municipal Building, Dayton, Ohio.

POSITIONS VACANT

STRUCTURAL CHECKER-detailer. All type structures. State qualifications, availability. Location East. P-1818, Engineering News-Record.

WANTED, SEVERAL engineering graduates, under 35, by large industrial fire prevention organization maintained by national insurance group for field work involving periodic inspections and special consulting service. Permanent. P-1994, Engineering News-Record.

DETAILER EXPERIENCED in preparing details for structural steel for bridges and buildings. Steady employment with one of the largest steel fabricators in the Southwest. State experience, references, age and salary requirements. P-2139, Engineering News-Record.

ESTIMATOR WANTED by General Contracting Firm located in Kansas. Applicant to be under 45 years of age, experienced in estimating all types of General Building Construction. If interested, advise age, education, experience and salary desired. P-2699, Engineering News-Record, 520 N. Michigan Ave., Chicago, Ill.

CARPENTER SUPERINTENDENT, for form construction on concrete dam located in Western Kansas. State age, experience, and salary expected. Elmer C. Gardner, Inc., P. O. Box 252, Ellis, Kansas.

WANTED: REGISTERED Engineer for work in Ohio, with building construction firm, 30 years in business, specializing in factory, mill and commercial buildings. Prefer man with experience in estimating, buying, and some sales experience. Firm does, roughly, $2,000,000.00 of business a year, consisting of heavy concrete work, structural steel, masonry and carpentry construction. P-2230, Engineering News-Record.

WANTED

SUPERINTENDENT

With heavy construction experience
Sewer Work Grade Crossing

Location New York State

Give Age, Experience, Salary and Full Particulars

P2285, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

STRUCTURAL STEEL ESTIMATOR

Well known New England fabricating company has an exceptional opening for young experienced structural steel estimator. A real opportunity exists for a man with estimating and sales ability. Give in detail experience, education, etc. References will be required. Replies held strictly confidential.

P-2133, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

POSITIONS VACANT

CIVIL ENGINEER wanted for a responsible permanent position with a large public utility located in eastern Pennsylvania. Must have a broad experience, a substantial portion of which has been in hydraulics. The position presents an excellent opportunity to the right man. Apply by letter stating age, education, detailed experience and salary requirements. P-2275, Engineering News-Record.

WANTED — MATURE construction engineer, qualified on water purification plants, sewage treatment plants, small steam and diesel power plants. Position will involve traveling five days per week throughout the middle-west. In reply give experience, with salaries received, present salary requirements, family status, and five references. Consoer, Townsend & Associates, Consulting Engineers, 351 East Ohio Street, Chicago 11, Illinois.

WANTED: EXPERIENCED estimator for Commercial and Institutional Building work. State qualifications, references and salary requirements. Work principally in Central Texas. Attractive permanent proposition to right man. P-2294, Engineering News-Record.

ESTIMATOR

Wanted by Phila. firm for large sewers, bridges, etc. Must have had experience with contractors in similar work. State salary, experience and when available.

P-2299, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

WANTED
BRIDGE DESIGNERS,
DESIGNER DRAFTSMEN, RESIDENT HIGHWAY ENGINEERS, SOILS ENGINEER

Experienced men wanted. State qualifications, age, salary and date available in first letter. Construction period, 24 months. Location, Eastern or Western Pennsylvania.

P-1617, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

ESTIMATOR WANTED

By Established General Contractor At Once. Doing work in Georgia, Florida and South Carolina. Location medium size Georgia City. Write full particulars, salary expected. Only answer if interested in permanent position and fully capable.

P-2383, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

POSITIONS VACANT

ESTIMATOR EXPERIENCED in preparing estimates for structural steel fabricator. Excellent opportunity with one of the largest steel fabricators in Southwest. State age, experience and salary required. P-2296, Engineering News-Record.

WANTED. CLASS "A" Carpenter Foreman and Superintendent for company specializing in good homes, commercial work, schools, etc. Top wages for one who shows results. West Brothers, 1208 South Bunn, Bloomington, Ill.

WANTED EXPERIENCED civil engineer for building construction, sewer and water mains, and bridges. Must be able to take off quantities, supervise and if necessary take over complete charge. State wages, experience and when available. In Wisconsin. P-2300, Engineering News-Record.

WANTED OFFICE Engineer. By large eastern construction firm for general office enginnering and quantity survey work. References required. P-2339, Engineering News-Record.

(Continued on page 94)

SEARCHLIGHT SECTION

Classified Advertising

EMPLOYMENT: "OPPORTUNITIES" :EQUIPMENT
BUSINESS: :USED OR RESALE

UNDISPLAYED RATE

(Not available for equipment advertising)

$1.20 a Line, minimum 4 lines. To figure advance payment count 5 average words as a line.
INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
Box Numbers in care of our New York, Chicago and San Francisco Offices count as one additional line.
Replies are forwarded each day as received at each of the offices mentioned without additional charge.
Discount of 10% is allowed if full payment is made in advance for 4 consecutive insertions.

DISPLAYED RATE

The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.
An advertising inch is measured ⅞ inch vertically on one col., 3 col.—30 inches to a page. E.N.R.

New advertisements received by February 27th will appear in the March 9th issue.

WANTED

CONSTRUCTION SUPERINTENDENT

Large heavy construction firm doing business along Middle and South Atlantic Seaboard is interested in securing the services of a top flight superintendent, thoroughly skilled in waterfront construction and in handling of all types of floating equipment. Work includes cofferdams, pile driving, timber work, concrete construction and steel erection. Steady employment on good sized projects. Fine opportunity for the right man to make a permanent connection with a good salary. Reply

P-2361, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

SALESMAN

Need top flight shovel and crane salesman who can produce in Metropolitan New York area. Will sell one of leading lines. Applicant must state experience, record, age and remuneration expected, in detailed resume for consideration. Our Sales Force has been notified of this ad. All replies held in strict confidence.

SW-2378, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

DISTRIBUTORS
and
SALES AGENTS
WANTED

for operating and maintenance specialties including coatings, and boiler water treatment endorsed by many foremost industrial concerns.

Various territories throughout the United States available.

Our agents are aware of these openings

RW-2310, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

POSITIONS VACANT

(Continued from page 93)

WANTED: MECHANICAL Engineer, age 35 to 45, should have had at least ten years experience in material handling, preferably in hoisting equipment field, also should have supervisary ability. Write full qualifications and salary requirements. P-2372, Engineering News-Record.

OPERATING PRODUCTION Engineer thoroughly familiar with gyratory and cone crushers, electric and diesel powered shovels and cranes, with proven record for handling production and maintenance men. Must be a driver and have a love for work. Location, New Jersey. Submit full written details, including past salaries. Also wanted, Master Mechanic for quarry and heavy construction equipment with proven record. Also wanted, Foremen and Blast-hole Drillers. Our personnel are aware of this ad. P-2365, Engineering News-Record.

SALESMAN FOR Expanding Iowa Contractor, able to develop leads and close sales, estimate jobs, permanent. P-2387, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

CONSTRUCTION EQUIPMENT Salesmen: Young men with mechanical or civil engineering background, familiar with compressors, pumps, and concrete handling equipment. Preferably men with following of contractors for both Chicago and New York territories. Old established firm handling nationally known lines of contractors machinery. Salary and commission. Reply giving resume of background and education. SW-2306, Engineering News-Record.

POSITIONS WANTED

PROJECT MANAGER. Grad. C. E. desires connection with NYC or North Jersey Contractor. All around man, 32. Good personality. Excellent references. PW-2309, Engineering News-Record.

STRUCTURAL DESIGNER — B.C.E., Age 25. Single. Four years experience designing reinforced concrete and structural steel industrial buildings. Prefer eastern location. PW-2114, Engineering News-Record.

CIVIL ENGINEER-Executive. Registered. 15 years diversified field and office experience, specializing in administration and contractural relations on buildings, bridges, roads, and utilities. Available March 1st. PW-2145, Engineering News-Record.

MASTER MECHANIC, Equipment Supt., Mechanical Operating Engineer, over twenty-five years' experience with erection, repair and maintenance of heavy industrial equipment, power house, pumping stations and marine equipment, etc., available immediately. Go anywhere. PW-2305, Engineering News-Record.

GRADUATE ENGINEER—Age 28. Varied field and office experience as foreman or engineer on bridges, roads, pumping stations, transmission lines, and pipelines. Operate best under pressure. Desires permanent connection as construction engineer with firm engaged in foreign work. PW-2318, Engineering News-Record.

CIVIL ENGINEER, 32, graduate, single. Experienced as field engineer and surveyor on highways, pipelines, airfield. Can do some structural design. Speaks construction Spanish. Desires position with engineer or contractor in Latin America. PW-2340, Engineering News-Record.

FOREIGN ACCOUNTING AND PERSONNEL MAN

Single Columbian citizen, 26, desires to train in American methods with Contractor doing business in Latin America. Twelve years accounting experience, six of which in Cement Plant Cost and three in General Contracting. Good English. Training more important than pay.

LAZARO GONZALEZ
Edificio Avila =302 Cali — Colombia

POSITIONS WANTED

CHIEF ESTIMATOR for General Contractor Available. Experienced all types General Construction. Current volume $60,000,000 per annum. Base salary $12,000 per year. Excellent references. PW-1813, Engineering News Record.

BUILDING SUPERVISOR. Party Chief, Architects Representative—wants work in Latin America with contractor or architect. A-1 reference. Single—age 46. Box 801, Coral Gables, Florida.

CHIEF DRAFTSMAN, Structural, desires connection fabricating shop. Thoroughly experienced shop standards. Capable organizing and producing drawing room results. PW-2240, Engineering News-Record.

MANAGER OR Superintendent. Dams, Bridges and Marine Construction. Twenty-five years experience. Practical and engineering background. Member ASCE. Available soon. PW-2115, Engineering News-Record.

CIVIL ENGINEER-Specialist in Concrete, Soil Mechanics, Bituminous Concrete; Field Control, Materials Investigation, Mix Design and Laboratory Testing. Past four years on concrete and earth dams; specifications and field supervision. PW-2359, Engineering News-Record.

CIVIL ENGINEER, university graduate, Certificate as P.E. of Nat. Bureau of Eng. Registration, over 20 years of excellent experience as project manager and designer on industrial buildings, bridges, hydro-electric developments, airports, etc., office and field. Interested in responsible position here or abroad, pref. S.A., where initiative, resourcefulness and dependability are needed. PW-2367, Engineering News-Record.

ENGINEERING TECHNICIAN: Available now, single 26 years old, experienced in Soils and Concrete Testing, construction office management and producers, photography. Prefer Denver Area or Experience record and references on request. PW-2380, Engineering News-Record.

MASTER MECHANIC, equipment superintendent or shop foreman, age 41, experienced supervisor of maintenance, repair and operation of all makes of heavy equipment, excellent references as to ability, location immaterial. PW-2376, Engineering News-Record.

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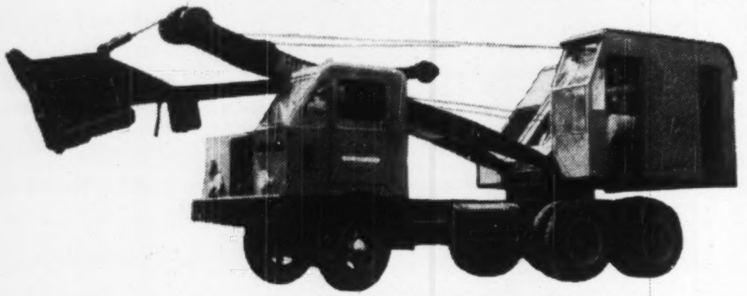

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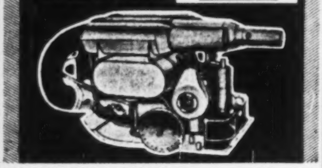

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U. S. Government

(Continued from page 91)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2916) will be received by Bureau of Reclamation, Denver, Colorado, March 15, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of the Green Mountain (Kremmling Tap)-Oak Creek, 115-kilovolt Transmission Line, Colorado-Big Thompson Project, Colorado. The work is situated in Grand and Routt counties, Colorado. Principal items are: Clearing 75-ft. right-of-way; and constructing 3-phase, wood-pole, H-frame-type transmission line approximately 50 mi. long with overhead ground wires. Time allowed for completion will be 150 and 300 days, respectively. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(556)

OFFICIAL PROPOSALS

Bids: March 29, 1950 (601)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Chapter 63 Laws of 1936, as amended, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 29th day of March, 1950, by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the elimination of the following Grade Crossings in Steuben County.

Con. No.	Type	Name of highway and miles	Deposit for plans	Bid Deposit	Dept. est.
PSC. 9418	Relocating R. R. tracks: paving streets with cement concrete pavt. & Asph. Conc. opt., including 20 R. R. Br. Structures 3 Pedestrian Subways; 2 Hwy. Br. Structures & Incidental Drainage and Misc. Work	Elimination of grade crossings of the Erie R. R. and the D.L. & W. R.R. with various sts and N.Y.C. R.R. in the City of Corning and vicinity 8.2 miles	$20	$500,000	$8,707,155

Maps, plans, specifications, and estimates may be obtained at the office of the Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineer H. F. Brumm, 30 West Main Street, Hornell, N. Y., and may be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract containing 1 to 15 sheets is $5.00; 16 to 30 sheets, $10.00; over 30 sheets, $100.00. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

Bids: March 21, 1950 (606)

Sewage Treatment Plant

VILLAGE OF CROTON-ON-HUDSON
NEW YORK
NOTICE TO CONTRACTORS

Bids will be received by the Village of Croton-on-Hudson on March 21, 1950, until 8:00 P.M. Eastern Standard Time, for the construction of a Sewage Treatment Plant.

Contract Documents may be examined at the offices of the Engineers, Bowe, Albertson & Associates, 110 William Street, New York City, New York and at the office of the Village Clerk, Municipal Building, Croton-on-Hudson, New York and obtained at the offices of the Engineers between the hours of 10:00 A.M. and 4:00 P.M. daily except Saturdays, Sundays and holidays.

VILLAGE OF CROTON-ON-HUDSON,
NEW YORK
By: Albert Rozell
Mayor

DATED: January 30, 1950
BOWE, ALBERTSON & ASSOCIATES
Engineers

Bids: March 21, 1950 (559)

Extensions to Sewage Treatment Plant

BOROUGH OF WASHINGTON
NEW JERSEY
NOTICE TO CONTRACTORS

Bids will be received by the Borough of Washington on March 21, 1950, until 8:00 P.M. Eastern Standard Time, for construction of Extensions to the Sewage Treatment Plant.

Contract Documents may be examined at the offices of the Engineers, Bowe, Albertson & Associates, 110 William Street, New York City, New York and at the office of the Borough Clerk, Borough Hall, Washington, New Jersey, and obtained at the offices of the Engineers between the hours of 10:00 A.M. and 4:00 P.M. daily except Saturdays, Sundays and holidays.

BOROUGH OF WASHINGTON,
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By: F. L. Suttle
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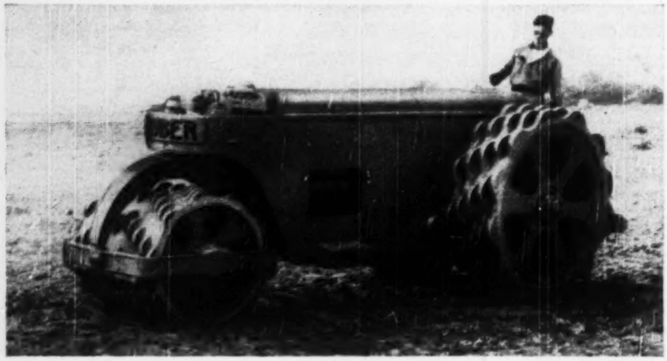

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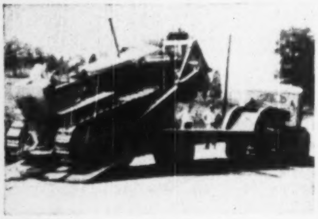
One-man self-propelled compaction roller has a series of five scalloped ribs at the outer circumference. Each rib consists of twelve 4-in.-high scallops with the ribs staggered from one row to another in such a manner that there is a high point every 3¼ in. The ribs are 2-in. wide and are spaced 2½ in. apart. Slope of scallops on one roll is opposite to scallop slope on the other. Height of the scallops on the rear roll is less than the front to provide better tractive effort and eliminate continuous grooves in the soil. Also, combined with undulations of the bends, it provides a kneading action to produce better compaction with minimum lateral displacement. These rollers have a per lineal inch compaction of 5,387 lb, and compact 4,100 sq ft per hr at an average speed of 2 mph. With standard rolls, it can be converted to a conventional 12-ton 3-wheel-type roller. Power is provided by a 118-hp diesel engine. Top speed is 5 mph in either direction.—HUBER MFG. CO., MARION, OHIO.



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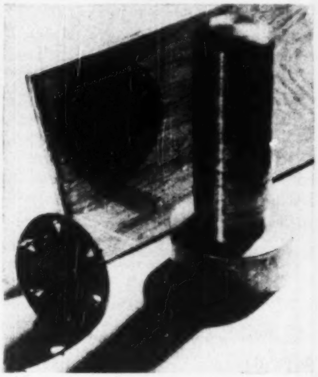
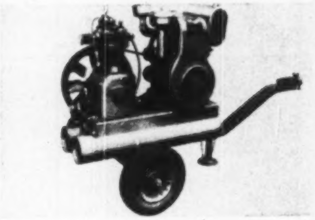


Plywood-Form Hole Covers

Metal disk is used to cover unneeded holes in plywood forms. These covers, constructed with a series of small barbs, are placed over the hole and driven into place with a blow of a hammer on the magnetic setting tool.—TROIEL COMPANIES, INC., 839 CHANNING WAY, BERKELEY, CALIF.

High-Pressure Hose Coupling

Streamlined design of Bar-Way high-pressure hose coupling eliminates obstructing projections and sharp edges and clamps. Full inside diameter of hose is maintained with no reduction of flow. Couplings will withstand any pressure the hose will take and have been tested for over 3,000 lb pressure with a pull of over 500 lb.—BAR-WAY MFG. CO., STAMFORD, CONN.



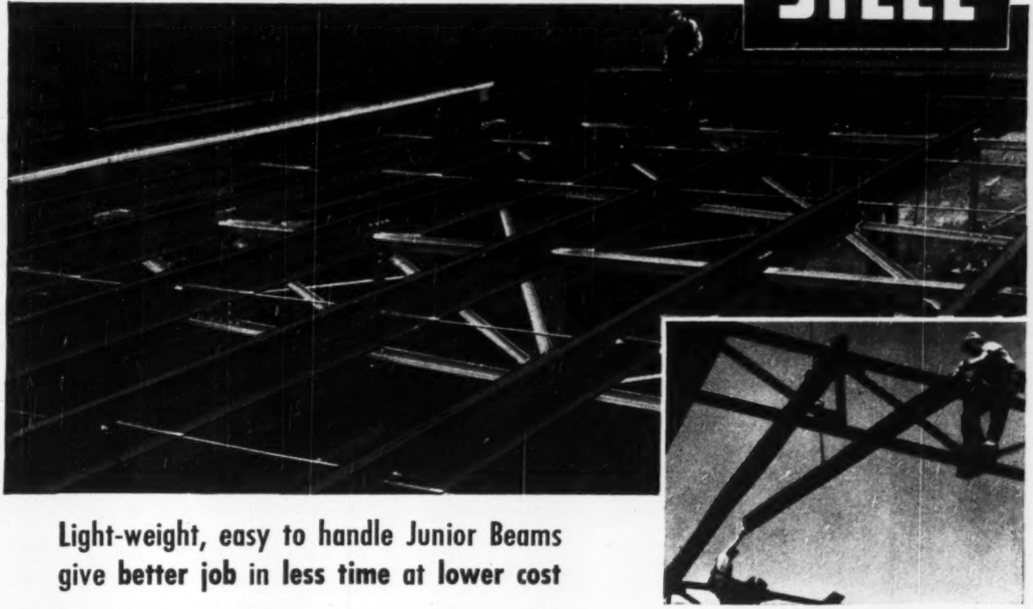
Trailer-Mounted Compressors

Portable compressor has sufficient capacity for operating paint-spray guns, chipping hammers, light paving breakers, spaders, tampers, and

(*Continued on page 103*)

J&L JUNIOR BEAM ROOF PURLINS
SAVE TIME AND MONEY
ON STEEL INSTALLATION AT WARREN, OHIO

J&L STEEL



Light-weight, easy to handle Junior Beams give better job in less time at lower cost

J&L Steel Junior Beams for roof purlins for industrial structures save both time and money. This was clearly demonstrated recently in a building designed for Standard Transformer Co., Warren, Ohio, by Keich & O'Brien, architects, fabricated by J. A. McMahon, Ltd., Niles, Ohio, and erected by Warren Engineering Co.

As the building progressed, the purlins were bolted directly into place without any secondary handling or joining operations. Sag rods were installed and bolted in position, and steel roof decking was welded directly to the beams.

The speed of erection, elimination of secondary operations and ease of handling the light-weight Junior Beams, effected considerable savings on steel installed.

Junior Beams, made *exclusively* by J&L, are the lightest weight, hot rolled steel beams commercially available. Used as roof purlins, floor joists and for other applications, they have these advantages:

LIGHT-WEIGHT—for easier handling. (10″ beam weighs 9 lbs. per ft.)

STRUCTURALLY EFFICIENT—safe load uniformly distributed for a 10″ beam on this building is over 3 tons.

FIRE-SAFE—affects insurance rates favorably on buildings.

NO SETTLING—minimizes plaster cracks, sagging doors and sticking windows.

ALSO—Vermin-proof . . . Termite-proof . . . Shrink-proof . . . Rigid and free of vibration.

J&L Junior Beams are available through your favorite steel warehouse—or through J&L warehouses at Chicago, Cincinnati, Detroit, Memphis, New Orleans, New York and Pittsburgh.

ARCHITECTS!
CONTRACTORS! BUILDERS!

Send for descriptive literature and engineering data on J&L Junior Beams and J&L Junior Beam floors.

USE THIS COUPON!

Jones & Laughlin Steel Corporation
428 Jones & Laughlin Building
Pittsburgh 19, Pa.

Please send me complete data on **J&L** Junior Beams and Junior Beam **floors.**

NAME ____________________

COMPANY ____________________

ADDRESS ____________________

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JONES & LAUGHLIN STEEL CORPORATION

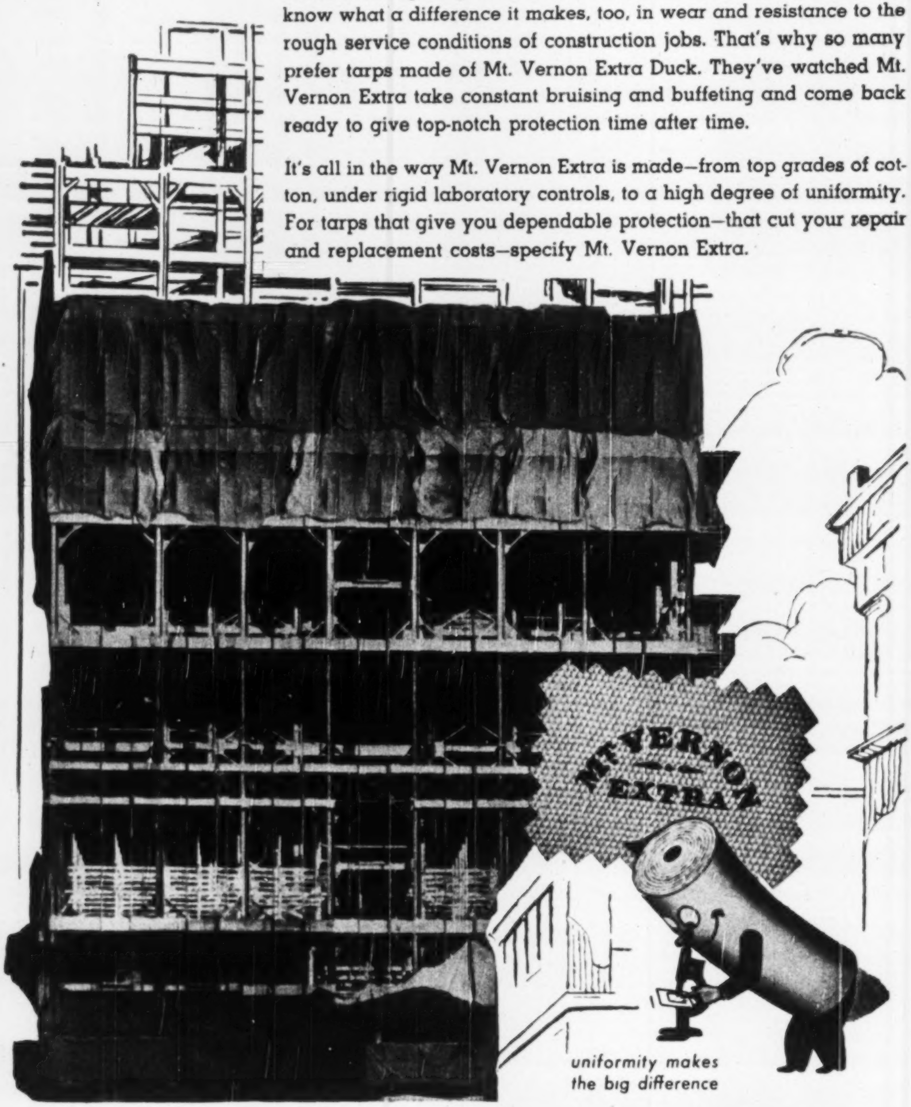
From its own raw materials, J&L manufactures a full line of carbon steel products, as well as certain products in OTISCOLOY *and* JALLOY *(hi-tensile steels).*

PRINCIPAL PRODUCTS: HOT ROLLED AND COLD FINISHED BARS AND SHAPES • STRUCTURAL SHAPES • HOT AND COLD ROLLED STRIP AND SHEETS • TUBULAR, WIRE AND TIN MILL PRODUCTS • "PRECISIONBILT" WIRE ROPE • COAL CHEMICALS

A Top Tarp Makes a Sure Shield

Men who specify tarps for the construction industry know how much fabric quality means to efficient, consistent protection. They know what a difference it makes, too, in wear and resistance to the rough service conditions of construction jobs. That's why so many prefer tarps made of Mt. Vernon Extra Duck. They've watched Mt. Vernon Extra take constant bruising and buffeting and come back ready to give top-notch protection time after time.

It's all in the way Mt. Vernon Extra is made—from top grades of cotton, under rigid laboratory controls, to a high degree of uniformity. For tarps that give you dependable protection—that cut your repair and replacement costs—specify Mt. Vernon Extra.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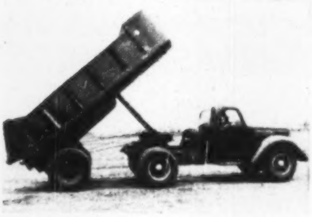
Branch Offices: CHICAGO • ATLANTA • BALTIMORE • BOSTON • LOS ANGELES • AKRON similar pneumatic equipment. These units are furnished complete with compressor, V-belt drive to gasoline engine, and pneumatic-tired mounting. Three sizes are available, and all units are carefully balanced for one-man handling. — Gardner-Denver Co., Quincy, Ill.

Tractor-Mounted Trencher

Ditches 7½ or 10-in. in width are quickly dug by the McDonald E-Z Mount trencher. Advantages of this tractor-mounted unit are: All adjustments are manually or electrically controlled from the tractor seat; powered by tractor's power take-off; digger blades fabricated from high-quality steel; two rotary conversion augers move dirt away from the trench; and shear-pin unit assures safety. Depth-control device attached to scraper simplifies following guide lines. — Mississippi Engineering Co., Inc., Grand Mound, Iowa.



Cable-Operated Dump Trailer

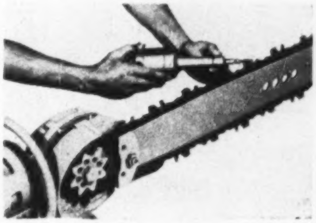
Allows dumping at angles up to 60 deg. without danger of overturning or twisting the support arms. The Clement 500 features lighter body design, lower center of gravity, and a rear sheave-hanger-assembly position which raises the cable lines for freer movement. A self-loading fifth wheel enables operator to quickly assemble or free the trailer with a minimum of effort.—Winch-Lift, Inc., First National Bank Bldg., Shreveport, La.

Heavy-Duty Engine Lubricants

New line of lubricants is designed for use with diesel and heavy-duty gasoline engines. The RPM Delo lubricants were developed to meet stringent operating conditions including higher horsepower engines, heavier loads, higher operating temperatures, and more severe lubrication requirements. Standard Oil Co. of California, 225 Bush St., San Francisco 20, Calif.

Air-Entrainment Tester

Air content of fresh concrete is quickly determined with the Press-Ur-Meter. It employs the Klein-Walker application of Boyles law and uses only about one tablespoonful of water, added on top of sample, to insure accuracy. No adjustments for varying barometric pressures are necessary. A complete test may be made in approximately 3 min. A direct reading is made in percent of air present. Unit weighs 19 lb and has a capacity of ¼ cu ft.—Charles R. Watts & Co., 4121 Sixth Ave., N. W., Seattle 7, Wash.



Chain-Saw Sharpener

Heavy-duty hand grinder is recommended for sharpening all types of chain saws. It is equipped with a 1/10-hp motor which runs on 115-v ac/dc. Unit features a lightweight aluminum casing, forced-fan cooling, and balanced construction. — The Dumore Co., Racine, Wis.

Automatic Boom Stop

Pulling of booms to dangerous elevations is prevented by the Davenport automatic boom stop. All moving parts are enclosed in the control box mounted near to and connected with the master clutch either directly or with a cable. The unit is spring powered and works on a catch-and-dog arrangement. In operation, as boom approaches danger point of elevation, it contacts a trigger. Length of trigger determines elevation at which boom will be stopped.—Davenport Ever Ready Boom Stop Co., Mountain Home Ark.

Ties for Masonry-Faced Walls

Tie is made of special metal material in which a thick copper covering is inseparably welded to a strong alloy-steel core. This results in these crimped V-shaped ties being rust and corrosion-proof, and unaffected by the action of moisture, lime, or mortar. Features include: Wide spread of V-Lok prongs anchors greater surface area of brick to studding; V-shaped design resists tensile stresses and spreads strains two ways; safe and easy handling; and crimped prongs anchor tie securely in mortar.—Copperweld Steel Co., Glassport, Pa.

Heated Truck Bodies

Deflection of hot exhaust from truck engines results in a heating system designed to prevent freezing of loads in dump bodies. Or, when handling wet or sticky materials, the heating system can be used to dry material in contact with bottom and sides sufficiently to permit easy dumping. Double-wall construction of the bottom, front, and lower portion of the sides allows gas to circulate freely and be exhausted through a vent in the side. Heated bodies are available as optional equipment.—The Euclid Road Machinery Co., Chardon Road, Cleveland 17, Ohio.

(*Continued on next page*)

With more grips than a wrestler AND

NO HOLDS BARRED

A wrestler with exclusive right to use unbreakable holds would win every bout.

A similar advantage, responsible for its unequalled performance, is a feature of the Owen Grapple.

Its ingenious Patented principle of operation enables each tine, or prong, to dig in and grip independently of the other tines-to grasp several rocks of varying size or hold in its unbreakable grip stone of tremendous size and fantastic shapes that could not possibly be handled by grapples of conventional design.

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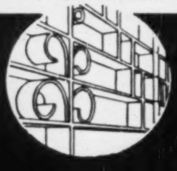

IF IT'S IRON OR STEEL

REMEMBER to have it HOT DIP GALVANIZED

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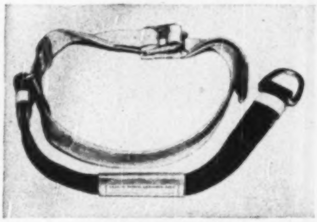
A *heavy* coating of zinc applied to iron or steel by the Hot-Dip Galvanizing process provides the utmost protection against rust. Molten zinc forms a perfect bond with the metal, providing an effective seal against corrosive action of the elements. For an economical top-grade job of genuine Hot-Dip Galvanizing, send your materials to a member of the American Hot Dip Galvanizers Association. List of members available at Association's headquarters in the First National Bank Bldg., Pittsburgh 22, Pa.

Electric Submersible Pumps

British-made submersible consists of a multi-stage centrifugal pump and a solid-coupled squirrel-cage-type ac induction motor. The Sumo pumps are made in six sizes with capacities ranging from 4 to 2,000 gpm. Outside diameters range from 5$\frac{5}{16}$ to 14 in. Electrical control may be arranged for hand control, oil break or push-button, or for fully-automatic operation.—SUMO PUMPS, INC., 1 ATLANTIC ST., STAMFORD, CONN.



Shock-Absorbing Safety Belt

Safety belt has a shock-absorber extension made of Unolyn. Unolyn is a member of the nylon family of chemical compounds, and is said to be capable of elongating—without rebound—to several times its original length. Safe-Hi belt permits the use of steel-cable lifelines because in cases of falling, the deceleration period is stretch out, holding impact to a minimum. Draw load and length of the Unolyn extension have been scientifically determined to provide full deceleration within a few feet to minimize hazard of man striking a girder or any projection before he is fully stopped.—THE ROSE MFG. CO., 1731 ARAPAHOE ST., DENVER 2, COLO.

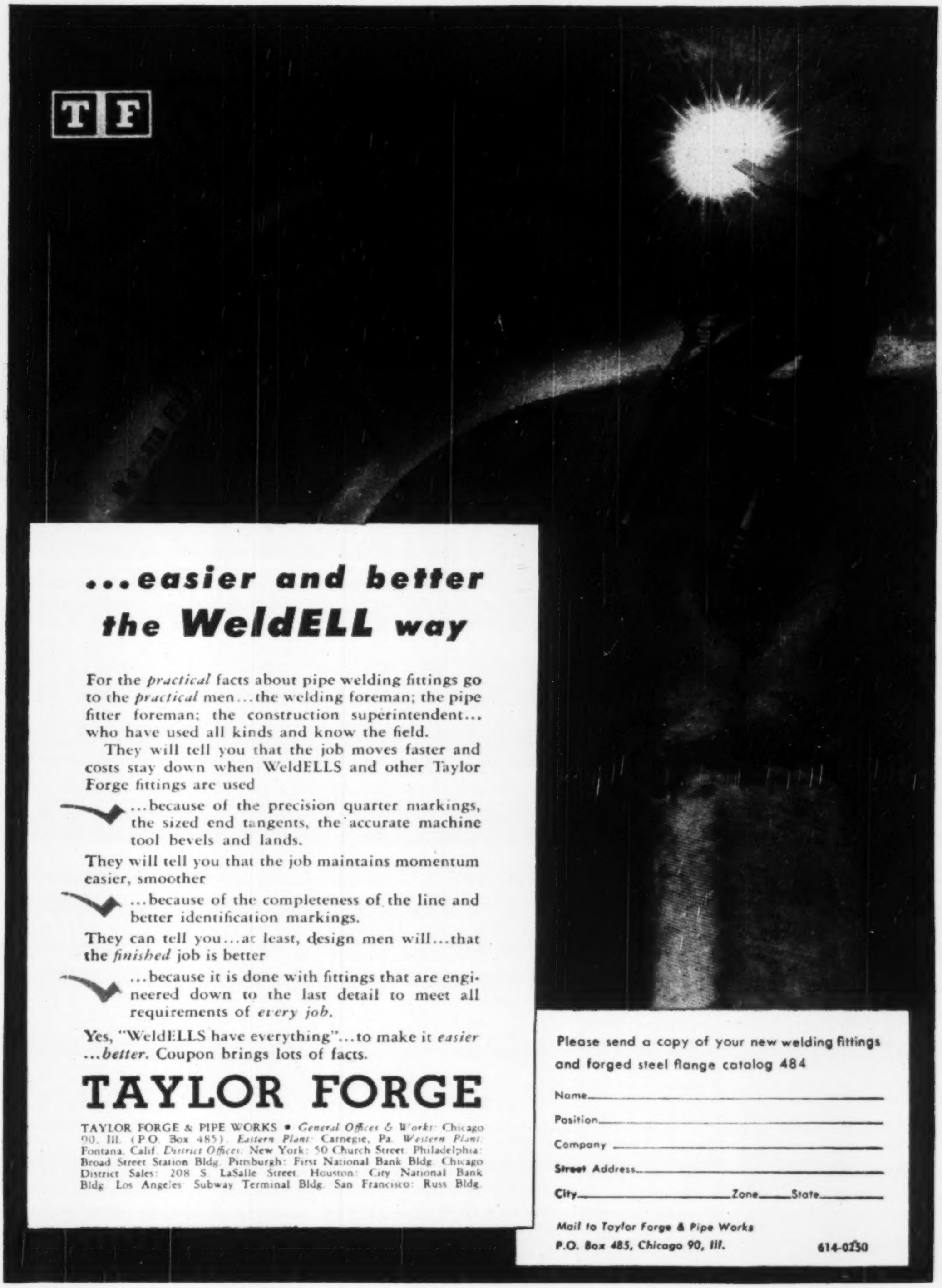
Sling Eliminates Seizing

Button-welded wire-rope slings eliminate the need for seizing the wire ends. Made to order for any kind of load, any kind of pull, and every type of hitch, Pennrope slings incorporate a double safety feature: Employee's hands are protected from splinters and frayed ends, and dependability of the sling is increased. Pennrope slings are available in all wire-rope diameters, with fittings, lengths, and styles to fit individual requirements. — PENNSYLVANIA WIRE ROPE CORP., 945 FIRST ST., WILLIAMSPORT 19, PA.

Four-Place Executive Airplane

Model B35 Bonanza incorporates several new features. Takeoff horsepower rating has been increased to 196 at 2,450 rpm; maximum of the engine is 205 at 2,600 rpm. Cruising speed at 8,000 ft is 170 mph; rate of climb is 890 fpm; and stalling speed, with flaps, is 56 mph. Takeoff run

(*Continued on page 106*)



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For the *practical* facts about pipe welding fittings go to the *practical* men...the welding foreman; the pipe fitter foreman; the construction superintendent... who have used all kinds and know the field.

They will tell you that the job moves faster and costs stay down when WeldELLS and other Taylor Forge fittings are used

- ✓ ...because of the precision quarter markings, the sized end tangents, the accurate machine tool bevels and lands.

They will tell you that the job maintains momentum easier, smoother

- ✓ ...because of the completeness of the line and better identification markings.

They can tell you...at least, design men will...that the *finished* job is better

- ✓ ...because it is done with fittings that are engineered down to the last detail to meet all requirements of *every job.*

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• Photo illustrates a shield driven tunnel with steel segments made up of COMMERCIAL plates and beams welded together. This method saves time, provides safety and holds excavation to a minimum. It will pay you to investigate Commercial's easy-to-install liner plates and beams on your next tunnel project. A Commercial Engineer is available—Write for appointment.

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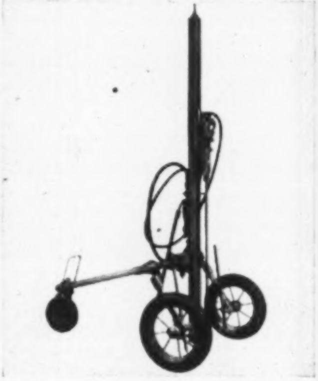
with 10-deg flaps and a wind of 10 mph is 580 ft; landing run with 30-deg flaps and 10-mph wind is 227 ft. Features include variable-pitch Beechcraft B-200 propeller; fast action of the retractable tricycle landing gear; increased flap travel and faster action; and zipper entrance to the 270-lb-capacity baggage compartment provides a sectional-shelf-cover for ease of entrance from the plane.—Beech Aircraft Corp., Wichita, Kans.

Electric-Controlled Axles

Electrically operated shift mechanism for two-speed axles assures positive control shifting between the various speeds in either gear-axle ratio, and encourages the use of the full range of speeds available. It does not eliminate manual transmission shifting, but controls the shifting between speeds on either the low or high-speed axle. No loss of engine or road speed is suffered when the electric shift is used.—Eaton Mfg. Co., Axle Division, 739 E. 140th, Cleveland, O.



Light Wagon Drill

One-man-operated lightweight wagon mounting handles sinker drills of the 55-lb class, or 3-in. drifters. Features are: longer steel changes, feed motor reduces operator fatigue, powered steel puller eliminates wrenching of steel and loss of holes in bad drilling ground, positive and uniform feeding pressure promotes faster unit drilling with lowered air consumption, universal-type saddle adjustable laterally on the cross-bar, and drill will not plunge if steel breaks. Standard drill carriage provides a 6-ft steel change.—Chicago Pneumatic Tool Co., 6 E. 44th St., New York 17, N. Y.

Manufacturers' Publications

Concrete-Test Cylinders – All-metal molds for compression tests of concrete cylinders are described in this 4-p. folder. The Moline cylinders are made in 6x12 and 8x16-in. standard sizes, with special sizes available on order. The bulletin lists eight features claimed for the molds, and shows four photographs illustrating their use.—MOLINE IRON WORKS, MOLINE, ILL.

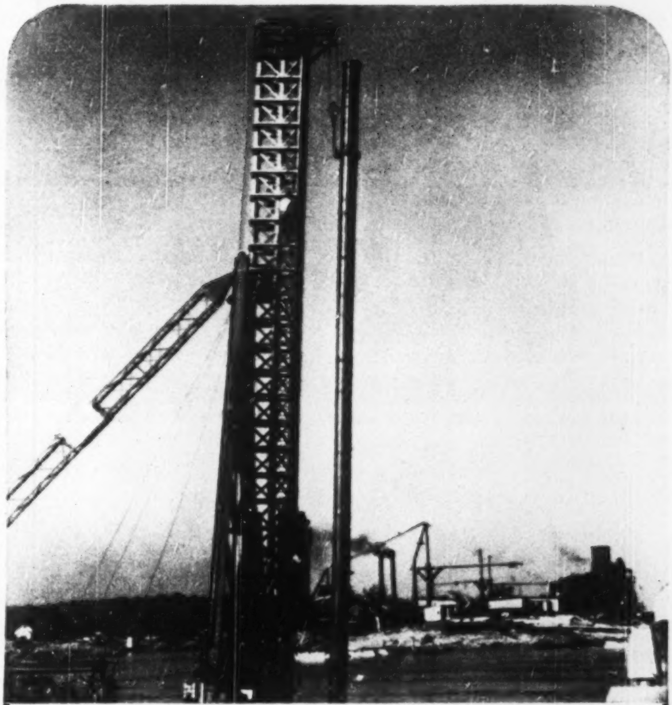
Masonry Saws—Saws for cutting all types of masonry materials are described in this 4-color folder which describes the Clipper manufacturing facilities, and features of the Clipper saws. A special insert contains list of the Clipper equipment and a special ordering form.—CLIPPER MFG. CO., 2809 WARWICK, KANSAS CITY 8, MO.

Non-Clog Pumps—Bladeless sewage-and-trash pumps are illustrated and described in this 16-p. catalog. Details of construction of the pump are featured—with special emphasis placed on construction of the single-passage bladeless impeller. Both horizontal and vertical types are listed in the bulletin. Engineering data cover principal dimensions and tables for selecting a pump for any required operating conditions. — FAIRBANKS, MORSE & CO., 600 S. MICHIGAN AVE., CHICAGO 5, ILL.

Bumping Posts—Ten circulars describing equipment for automatic stopping of railroad cars have been combined into a loose-leaf-type catalog. These circulars describe bumping posts, wheel stops, and derailing devices. Complete details are provided for each unit—the sizes in which they are produced, method of operation, features, and recommended applications for each.—HAYES TRACK APPLIANCE CO., 110 N. 3RD ST., RICHMOND, IND.

Solvent-Type Asphalt Coating—Three new data sheets describe various types of asphalt coatings. Bulletin I-C 221 describes Flintkote Trowel Mastic, a solvent-type asphalt coating containing asbestos and mineral stabilizers used for water resistance on the interior of exterior masonry walls. Bulletin I-C 222 describes Flintkote Semi-Mastic, a similar material for brush applications. Bulletin I-C 229 describes Flintkote Plastic Cement No. 232, a heavy-consistency asphalt cement for repairing roofs, leaks, and cracks in masonry, for maximum re-

(Continued on next page)



Drive Costs Down With This Piling

Have you heard about the time and money-saving features of Armco Foundation Piling?

You save on material because a wide range of diameters (10" to 36") and wall thicknesses ($\frac{3}{16}$- to $\frac{1}{2}$-inch) enable you to match exact job requirements. Uniform diameters mean salvageable cutoffs.

Armco Piles are easy to drive too. A simple driving head without mandrel is sufficient for even thin-walled sections. Steel end-closure plates, cone drive points, special cutting shoes and welding collars come mill-attached to save time and trouble in the field.

You can order Armco Foundation Pipe in any length that can be handled and shipped. Each length is exceptionally round and straight. This makes inspection easier after driving and reduces the number of rejected piles. Write for the complete money-saving story. Armco Drainage & Metal Products, Inc., Welded Pipe Sales Division, 3550 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation.

Export: The Armco International Corporation.

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● Customers tell us that "Quick delivery" and "United States Steel Supply Company" mean the same thing to them. When emergency repairs had to be made or a deadline had to be met, they tested our service and found that our "*quick delivery*" usually surpassed their most exacting demands. And in regard to ordinary deliveries, many customers, in a recent survey, wrote "I like your promptness."

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sistance to water and weather. It meets Federal Specification SS-C-153 Type 1.—THE FLINTKOTE CO., INDUSTRIAL PRODUCTS DIVISION, 30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

Water Conditioning—Aeration-type of water conditioning is thoroughly described in a 12-p. bulletin. Equipment described includes cascade, coke tray, and steel-coke-tray aerators. Cutaway line drawings make it easy to understand the construction details of the GFC degasifier, deaerating heaters, cold-process vacuum deaeration, and decarbonation tank. The theory of all processes is described in detail. Model contract specifications are presented for all GFC products.—GENERAL FILTER CO., AMES, IOWA.

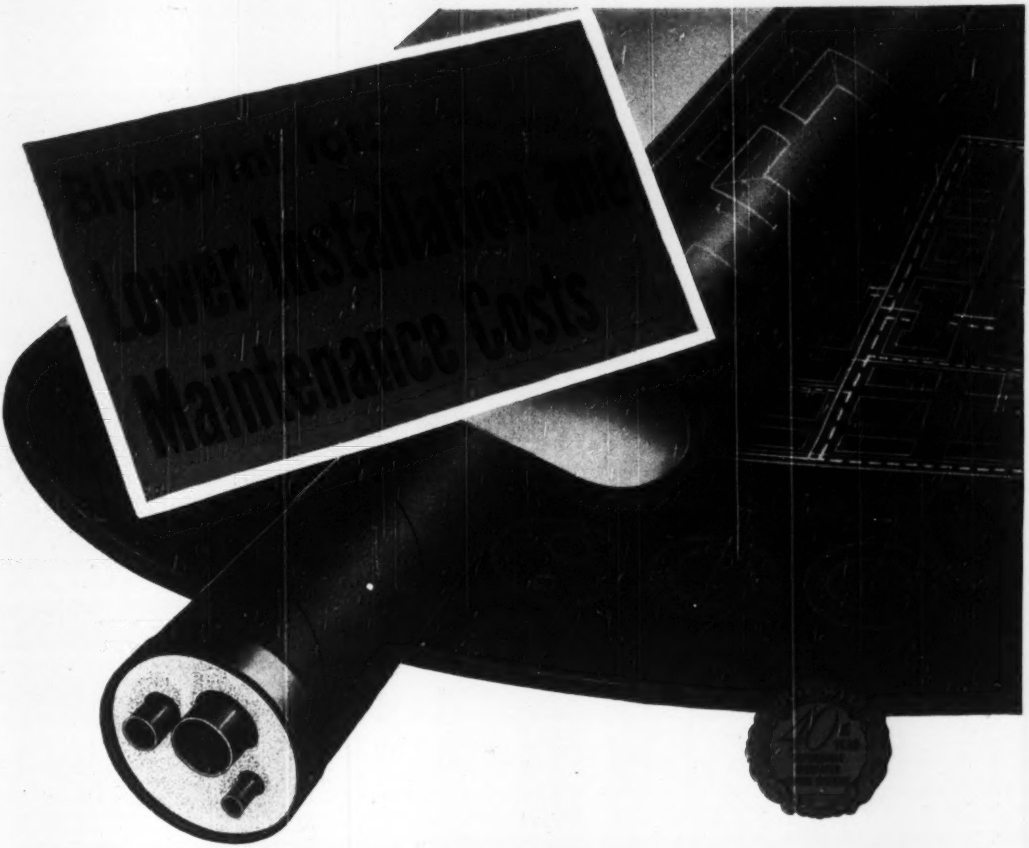
Movie on Blueprinting – Educational film, "The Print Before the Product", tells the story of making blueprints and other reproductions. The film shows actual shop practices; the inner workings of some lesser-known processes; and the making of cloth-tracing reproductions, blow-ups, film negatives, and planographs. This sound-and-color 16-mm film has a running time of 35 min. — INTERNATIONAL ASSN. OF BLUE PRINT & ALLIED INDUSTRIES, 506 S. WABASH AVE., CHICAGO 5, ILL.

Vibration Due to Blasting—Ground vibration due to blasting and its effect upon structures is discussed in a report made available in pamphlet form. It discusses all phases of the subject, including personal reactions, development of instruments necessary to obtain the data, and other factors entering into a discussion of this type. The pamphlet is well illustrated with charts and tables of engineering interest. — LIBERTY MUTUAL INSURANCE CO., 175 BERKELEY ST., BOSTON 17, MASS.

Diesel Engines—Sixty-eight high-speed and three medium-speed diesel engines are described in a 36-p. condensed catalog. Comparative charts, listing major specifications for each engine, assist in preliminary selections of a Cummins diesel for any specific application. Torque, horsepower, and fuel-consumption data at all rpm and load conditions within the range of each engine are presented in curve form. Models described have hp ratings from 100 at 1,800 rpm through 550 at 2,100 rpm.—CUMMINS ENGINE CO., INC., COLUMBUS, IND.

Tarpaulins—Winter-weight tarpaulins, in thirteen sizes, are listed on a new data sheet. The Penguin tarps are

(*Continued on page 110*)



RIC-WIL INSULATED PIPING SYSTEMS HAVE BUILT-IN PERMANENCE

When piping system specifications call for high thermal efficiency plus low installation and maintenance costs, the answer is Ric-Wil.

Backed by forty years' experience, Ric-Wil Prefabricated Insulated Piping Systems represent the most practical solution to problems involving exposed or underground insulated piping.

Full engineering service rendered by the Ric-Wil organization insures system efficiency and eliminates costly "cut-fit-and-try" installation procedures.

Upon request, our representative will be glad to provide detailed Ric-Wil technical information as related to your specific problem.

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STANDARD STEEL "S-J"
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Compare These Special "S-J" Features:

1 SUCKS BACK surplus material into tank after spraybar is closed. Less drip! Means clean bar for next job!
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3 All OPERATIONS easily controlled by one operator riding the unit!
4 GRAVITY DRAW OFF ON CURB SIDE—means greater safety for operator!
5 ALL PARTS Readily Accessible for easy repair. Entire piping system can be taken down by unbolting only two circle flanges!

SAVES TIME and LABOR
HANDLES ALL TYPES OF BITUMINOUS MATERIAL

★ For year round use—Standard Steel "S-J" Maintenance Distributor can be used either for emergency or secondary construction work.

The most adaptable piece of road equipment you can buy, the "S-J" performs many duties of heavier machines — such as building drives, alleys, playgrounds, parking areas, shoulders, reshaping curves as well as patching and sealing. Quick to start and get going, fast on the job, the low cost of this equipment will be paid for in reduced construction and maintenance cost in a single season. Get the facts and cost on the "S-J" before you invest in any similar equipment.

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Asphalt Pressure Distributors, Tar Kettles, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Street Flushers, Construction Brooms and Aggregate Spreaders.

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SJ5

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Exploration for coal and other mineral deposits. Foundation test boring and grout hole drilling for bridges, dams and all heavy structures. *Core Drill Contractors for more than 60 years.*

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Contract Core Drill Division • MICHIGAN CITY INDIANA

available in three weights and are especially recommended for winter use. The data sheets lists several features claimed for the tarps, and lists the sizes in which they are available. Also described on this data sheet are the Danco oil salamanders, canvas wall stripping, and a cotton-duck utility bag. — C. R. DANIELS, INC., 4900 BLOCK WETHEREDSVILLE ROAD, BALTIMORE 16, MD.

Small-Line Valves—Valves for use on meter, gage, instrument, and other small lines are described in 4-p. Bulletin 491. The Edward's valves have a rating of 6,000 lb WOG at 100-deg F. or 1,500 lb sp at 850-deg F. with carbon-steel bodies and 1,500 lb sp at 1,000-deg F. with stainless-steel bodies. Bulletin 491 contains dimensions, weights, prices, and operating data.—EDWARD VALVES, INC., SUBS. OF ROCKWELL MFG. CO., EAST CHICAGO, IND.

Drafting Machines—Standard drafters, combining the functions of T-square, straightedge, triangles, protractor, and scales in one unit, are described in 4-p. Bulletin A-1062. Features described in detail include touch control, Equipoise mechanism which counteracts the effect of gravity when drawing board is tilted, and precision and endurance built into the Bruning equipment. Detailed information is provided on five different models. — CHARLES BRUNING CO., INC., 4714-40 MONTROSE AVE., CHICAGO 41, ILL.

Overhead Sectional Doors — Special and large doors for commercial and industrial applications are listed in an illustrated 8-p. catalog. Specifications and miscellaneous data for laying out and engineering of doors are included. Specifications are also listed for the Calder line of electric-radio-controlled-door operators. Complete information is provided on jamb construction for using these doors. — CALDER MFG. CO., 630 N. PRINCE ST., LANCASTER, PA.

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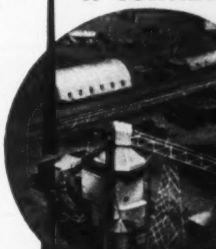

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PERSPECTIVE . . .

Panel spells out sanitary-engineering policies

It's no secret that Sanitary Engineering, as a specialized branch of civil engineering, is a basic requirement for economic development.

The problems are these: Where do you find the sanitary engineers themselves; how to you train them?

If you must use these men—and you must—to spearhead the growth of industry abroad by making pest-holes habitable, and at home to keep watch on the public health, answers to the questions must be found.

So the U. S. Public Health Service quietly called in a group of 36 leaders in the sanitation field. With them it explored basic policy guides for formulating, promoting and carrying out sanitation programs.

The results of the two-day conference—which involved state and local public health men, educational leaders, consulting engineers, industrial executives—haven't as yet been announced formally. But the group arrived at informal agreement on basic principles to guide education and training, improve employment conditions and opportunities, and raise the economic status of sanitary engineers.

These principles, which will be of interest to educators as well as practicing engineers, are:

1. Future university study pursued in preparation for the practice of sanitary engineering should encompass a minimum of five years of mathematics, basic-science and the engineering disciplines. This can be accomplished by four years of engineering study leading to a bachelor's degree in sanitary engineering. The fifth year should include sanitary-engineering subjects plus thorough grounding in the principles of public health. Continuous study is desirable.
2. University - level sanitation study should include instruction in mathematics and basic sciences adequate to give a foundation for advanced pursuit of the sciences and engineering and medical disciplines by individuals qualified to benefit by graduate study.
3. Field-training programs can be a supplement but never a substitute for rigorous academic education.
4. No substitution can be made for skills that the qualified sanitary engineer brings to his work. Within the field of environmental sanitation, it is realized, however, that a wide variety of skills is essential and that trained personnel other than sanitary engineers may possess some of those skills and apply them successfully in special cases.
5. Procurement of young men for the sanitary-engineering profession rests on the intellectual and financial attractions of the job. Means should be developed for advancement of sanitary engineers in their profession and for lifting their salaries to higher levels.
6. There is evidence that increased opportunities in public health beyond the technical sanitary-engineering field are available to qualified sanitary engineers.
7. It is desirable that the Public Health Service make studies of (a) the need for sanitary-engineering personnel in all areas of endeavor where engineering disciplines may contribute to promotion of public health, the study to be sufficiently broad to include current and future trends, and (b) rate of loss from the sanitary-engineering field, after graduation, of those receiving academic training in the field.
8. The principle is re-affirmed that planning and direction of local environmental-sanitation programs should be by competent sanitary engineers and that organization and employment to that end should be advocated and promoted by all public-health officials.

ARCHITECTS and
CONSULTING ENGINEERS
On Parade

"Here's what we do for you"

Kansas City's businessmen learned about the contributions of architects and engineers over lunch recently.

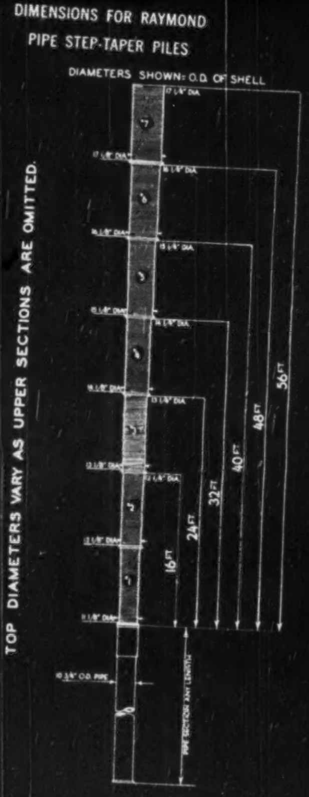
Their instruction came from members of these professions, through a number of college students, by way of an advertising agency.

It all started when these professions were asked to present a lunchtime show for Kansas City's Chamber of Commerce, the 32nd such presentation in a monthly series which acquaints the Chamber's membership with various industries contributing to the city's economic life.

In an effort to sell the professions they represent, Chamber members who are in private practice as architects and engineers raised $1,800 among themselves, then took their problem to an advertising agency. Out of it came a script which dramatizes the contributions of these professions, and a striking presentation.

A professional actor delivered the script's introduction. Then, advanced speech students of William Jewell College portrayed the engineers and architects, all anonymous, who expounded their contributions. The room was darkened for the presentation, with illustrative pictures flashed on the central screen. On either side, covering the speakers through which voices were heard, were backlighted photographs of representative projects.

The presentation was done entirely without mention of individuals or specific projects.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40FT
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56FT
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PIPE SECTION ANY LENGTH
TOP DIAMETERS VARY AS UPPER SECTIONS ARE OMITTED.

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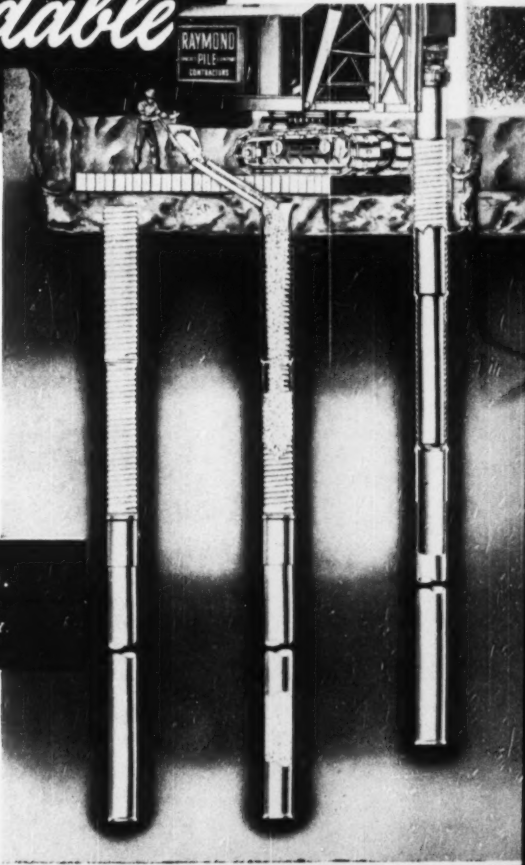
4. COMPOSITE . . . 5. GOW CAISSONS

Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning; borings and soil investigations; waterfront construction and harbor and river improvements; also cement mortar lining of pipes by the Centriline Corporation, a Raymond Subsidiary.

3. PIPE STEP-TAPER PILES

Deep and Dependable

At the right, the pipe step-taper pile is being driven with the rigid steel mandrel. In the center the shell and pipe are being filled with concrete after having been driven to satisfactory resistance and inspected. At the left is a completed pipe step-taper pile.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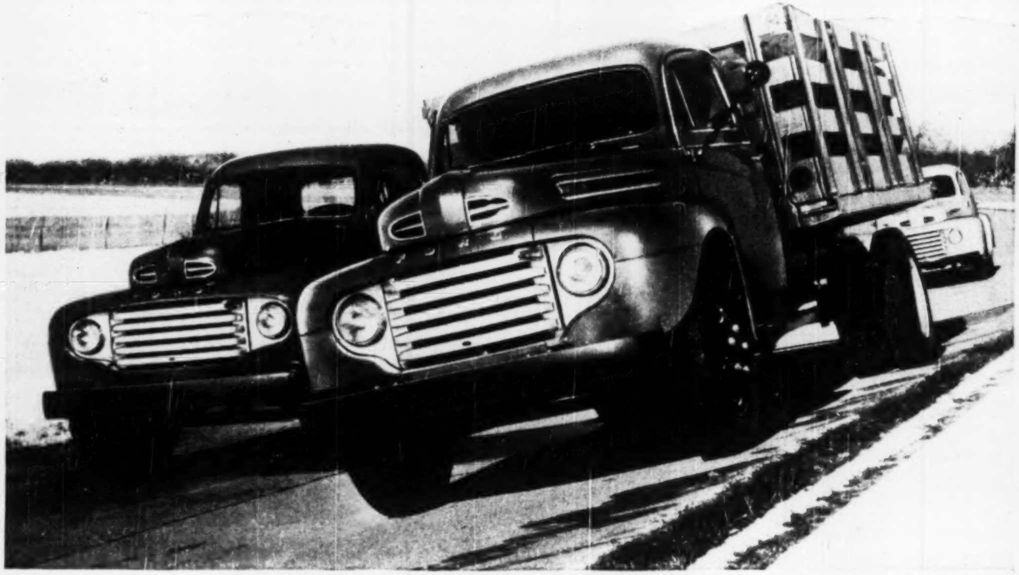
21 Smart ideas* for 1950!



(L to R) Ford 145-h.p. Model F-7, Model F-5 and Model F-1 passing tough tests at the Ford test track.

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Only Ford gives you a choice of V-8 or Six in a full line of over 175 truck models!

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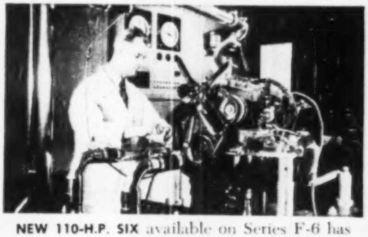
21 Smart ideas ✱ New 110-h.p. 6-cylinder engine ✱ New Parcel Delivery models ✱ New air brakes available on the F-8 ✱ New wheelbases: 176-in. for F-5 and F-6; 147-in. and 178-in. on Big Jobs ✱ New 15-in. by 5-in. rear brakes for the F-7 ✱ New 4-speed Synchro-Silent transmission with 110-h.p. engine ✱ New single-speed rear axle for F-8 ✱ New, extra-heavy duty clutch with 110-h.p. Six ✱ Million Dollar Cab ✱ Level Action cab mounting ✱ Air Wing door glass ventilators ✱ New Double Channel frame for Big Jobs ✱ Gyro-Grip Clutches ✱ New single-speed axle for F-6 ✱ Roll Action Steering ✱ New, extra-heavy drive line with 110-h.p. Six ✱ Quadrax rear axles ✱ 4 engines—choice of V-8 or Six ✱ New heavy duty 3-speed Synchro-Silent transmission available for F-1, F-2, F-3 ✱ Choice of over 175 models ✱ Bonus Built construction, which means big reserves of strength and power.

NEW PARCEL DELIVERY chassis comes with grille, windshield and front quarter-windows. Available in Series F-3 and F-5 (Special order).



NEW 110-H.P. SIX available on Series F-6 has Free-Turn exhaust valves, Autothermic pistons, chrome-plated top piston ring.

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FORD TRUCKS LAST LONGER

Using latest registration data on 6,106,000 trucks, life insurance experts prove Ford Trucks last longer.